Arachnological contributions

Description of four new *Steatoda* species (Araneae: Theridiidae) from the Mediterranean region with notes on some related species

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Journal of the Belgian Arachnological Society

Volume 39 (2) (supplement)

July 1, 2024

Arachnological contributions is a supplement to *Journal of the Belgian Arachnological Society,* a publication of Arachnologia Belgica (ARABEL), The Belgian Arachnological Society.

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How to cite: VAN KEER, J., BOSSELAERS, J., OGER, P. (2024). Description of four new *Steatoda* species (Araneae: Theridiidae) from the Mediterranean region with notes on some related species. *Journal of the Belgian Arachnological Society* **39**(2) supplement: 1-77.

ISSN 2795-8957

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Front cover: Photographs of the females of the four newly described *Steatoda* species as well as the closely related *Steatoda concolor*, placed against the backdrop of the Mediterranean at the centre of their known distribution range.

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Abstract

Four new *Steatoda* species from the Mediterranean region are diagnosed, described and illustrated: *S. koeni* sp. nov. (♂♀, Morocco), *S. ingeae* sp. nov. (♂♀, Morocco), *S. dickjonesi* sp. nov. (♂♀, France) and *S. verae* sp. nov. (♂♀, Spain). The holotype of *S. triangulosa concolor* (Caporiacco, 1933) was examined and found to be a subadult specimen, the subspecies is elevated to species level and *S. concolor* stat. nov. is described from both sexes (♂♀, Libya, Tunisia, Algeria), and the female of *S. trianguloides* is redescribed. Three new synonyms are proposed: *S. moerens* (Thorell, 1875) is found to be a junior synonym of *S. latifasciata* (Simon, 1873) new syn.; *S. incomposita* (Denis, 1957) is found to be a junior synonym of *Steatoda albocincta* (Lucas, 1846) new syn.; *S. albomaculata infuscata* (Schenkel, 1925) is synonymized with *S. albomaculata* (De Geer, 1778) new syn.; *S. venator* (Audouin, 1826) is considered a *nomen dubium*. All Euro-Mediterranean *Steatoda* species except *S. xerophila* Levy & Amitai 1982 are illustrated and a key to the species is provided.

Introduction

SUNDEVALL (1833: 15) erected the genus *Steatoda* in the family "Theridides" and transferred *Aranea bipunctata* Linnaeus, 1758, *Araneus castaneus* Clerck, 1757, *Aranea albo-maculata* De Geer, 1778, and *Araneus lunatus* Clerck, 1757 to it. He did not designate a type species. The type species (*S. castanea*) was designated by Thorell (1869: 93). Simon (1881: 152) included only a single species (*S. bipunctata*) in the genus and tried to designate it later as type species (Simon 1894: 581). THORELL (1869: 94) described the genus *Lithyphantes*, quite similar to *Steatoda*, with *Aranea albo-maculata* as type species. SIMON (1881: 161) described the genus *Teutana* and groups three species in it, all very similar to or even formerly belonging to *Steatoda*: *T. castanea*, *T. grossa* (C.L. Koch, 1838) and *T. triangulosa* (Walckenaer, 1802). Simon (1894: 581) designated *T. triangulosa* as type species. ROEWER (1942: 412, 414, 404) lists 19 species in *Steatoda*, as well as 23 in *Teutana* Simon, 1881 and 53 in *Lithyphantes* Thorell, 1869. LEVI (1957: 375) synonymised *Lithyphantes* and *Teutana* with *Steatoda* and designated *S. bipunctata* as the type species of the genus, but the type species was already designated by Thorell (see above). LEVI & LEVI (1962: 16-28) synonymised five more genera with *Steatoda* (*Ancocoelus* Simon, 1894, *Argyroelus* Hogg, 1922, *Asagenella* Schenkel, 1937, *Steassa* Simon, 1910 and *Stethopoma* Thorell, 1890) and accepted *S. castanea* as the type species.

Steatoda is the third largest genus of the family Theridiidae with 120 species, after *Dipoena* with 159 species and Theridion with 582 species (WSC 2024). Of the 115 species and five subspecies in *Steatoda* 35 are occurring in Africa, 47 in Australasia, including 23 in China, 35 in the Americas, 13 in Europe and 19 in the Euro-Mediterranean region, five of them presently having a cosmopolitan distribution: *S. albomaculata, S. bipunctata*, *S. castanea*, *S. grossa* and *S. triangulosa*. Members of this genus are small to fairly large spiders (2 – 15 mm), represented in West and Central Europe by five well-known species which are all cosmopolitan (see above). In the Mediterranean region, several less known species occur,

most of which are known from both sexes, some known from only one sex. Given the many underexplored regions, several undescribed species are to be expected in the future. In their revision of the *Steatoda* of Israel and Sinai, LEVY & AMITAI (1982) state that the occurrence of ten *Steatoda* species in a restricted area may be an indication of a greater species diversity than previously assumed. LEVY (1991) added an eleventh species for the region, *S. trianguloides*. Four new species are described in this paper. The aim of this paper is to provide descriptions and illustrations of these four species, to provide information that will allow unambiguous identification as well as to make clarifications on the status of some other poorly known species. General patterns in the male and female genitalia of *Steatoda* are illustrated in Figures 1 and 2.

Material and methods

The specimens studied in this paper were partly obtained by the senior author and Robert Bosmans during expeditions to Morocco and Tunisia. Other important specimens, housed in the Manchester Museum, were collected by Dick Jones during his excursions to the French Pyrenees and Spain.
Type material is deposited in the MMUE and RBINS as indicated in the text. Non type material is deposited in the collections of R. Bosmans, J. Van Keer and P. Oger. Details of male palps and female epigynes were studied using a Nikon SMZ 1270 stereomicroscope. After study, male palps and epigynes were returned to 70% ethanol. Left palps are illustrated. Somatic measurements were made with a scaled eyepiece in the stereomicroscope and are presented in millimeters. Measurement ranges given are from minimum to maximum observed. Description of colouration is of preserved adult specimens.
Specimens for drawings were observed and drawn using Euromex MIC465 and Olympus SZX9 stereo microscopes. Male palps were immobilized in standard ethanol disinfecting hand gel. Vulvae were dissected and cleaned for microscopy with trypsin (Sigma) for 24h at room temperature, followed by clearing in methyl salicylate for observation. Very dark vulvae were also bleached for 24h in stabilised 35% hydrogen peroxide. As an aid in drawing, they were photographed with an Olympus E5 digital camera connected to a Wild M12 microscope using a DSLROTC-Pro adapter (www. LMscope.com). The image series obtained was stacked with Zerene Stacker version 1.04 build T2021-08-28-1410, using "Pmax", a pyramid method based on repeated smoothing and subsampling of the image.
Photos of the habitus were taken with a Moticam camera (10 megapixels) on an Olympus SZX7 binocular microscope. All photos of the genitalia are taken with a Moticam camera (5 megapixels) on a Realux microscope.
Habitus and genitalia of *Steatoda ephippiata* and *Steatoda triangulosa concolor* were photographed with a Leica MZ16 binocular microscope and manipulated with the Leica Application Suite (LAS) stacking software (ver. 3.8; Leica, https://leicacamera.com). This way, a Z-stack of 15–20 images was merged into a single photomontage.
As the nomenclature of theridiid male palp elements is complicated and has changed considerably over time (LEVI 1957, KNOFLACH 1996, AGNARSSON 2004, 2007, LECIGNE *et al*. 2020) it was decided to follow the nomenclature of AGNARSSON (2004, 2007).

Abbreviations

ATVS:	University of Tunis, El Manar
CJVK:	Collection Johan Van Keer
CMA:	Collection Mark Alderweireldt
CPO:	Collection Pierre Oger
CRB:	Collection Robert Bosmans
HUJ:	Hebrew University of Jerusalem
MCSNG:	Museo Civico di Storia Naturale, Genova
MMUE:	Manchester Museum, University of Manchester, UK
NHM:	The Natural History Museum, London
NHMW:	Naturhistorisches Museum, Wien

NHRS: Natural History Museum, Stockholm
NMB: Naturhistorisches Museum, Basel
NMP: National Museum, Prague
OUM: Oxford University Museum
RBINS: Royal Belgian Institute for Natural Sciences, Brussels
RMCA: Royal Museum for Central Africa, Tervuren
SMF: Natur-Museum und Forschungsinstitut Senckenberg

Body: TL: total length, CL: carapace length, CW: carapace width, Fe I: femur I, Ti I: tibia I

Eyes: AER: anterior eye row, AME: anterior median eyes, ALE: anterior lateral eyes, PER: posterior eye row, PME: posterior median eyes, PLE: posterior lateral eyes

Genitalia: A: atrium, AG: anchoring grooves, C: conductor, CD: copulatory duct(s), CO: copulatory opening, Cy: cymbium, do: dorsal, E: embolus, EA: embolar apophysis, FD: fertilisation duct(s), MA: median apophysis, pl: prolateral, Pti: palpal tibia, rl: retrolateral, ST: spermatheca(e), T: tegulum, TTA: theridiid tegular apophysis (CODDINGTON, 1990: 18), ve: ventral

Taxonomy

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Family Theridiidae Sundevall, 1833
***Steatoda* Sundevall, 1833**

***Steatoda dickjonesi* Bosselaers & Van Keer sp. nov.**
(Figs. 3 A-H, 4 A-E, 5 A-F, 6 A-F, 44)

Material examined

Holotype
FRANCE • ♂; Ariège, vallée d'Auzat (D108), just after road to Artiès; 1000 m a.s.l.; 29 May 1991; D. Jones leg.; on abandoned building; one palp dissected; MMUE G7605.2218.

Paratypes
FRANCE, same data as for holotype: • 1♂; MMUE G7605.2221 • 1♂; MMUE G7605.2214 • 1♂; MMUE G7605.2224 • 2♂♂; MMUE G7605.2247 • 1♂; MMUE G7605.2213 • 1♂; MMUE G7605.2215 • 1♂, 1 juvenile; MMUE G7605.2223 • 2♂♂; MMUE G7605.2217 • 1♂; MMUE G7605.2216 •1♂; one palp dissected; MMUE G7605.2219 • 1♂; RBINS G7605.2216 • 2♀♀; MMUE G7605.2244 • 1♀; MMUE G7605.2246 • 1♀; MMUE G7605.2245 • 1♀; MMUE G7605.2250 • 1♀; MMUE G7605.2251 • 1♀; MMUE G7605.2241 • 1♀; MMUE G7605.2248 • 1♀; MMUE G7605.1556 • 1♀; MMUE G7605.2254 • 1♀; MMUE G7605.2249 • 1♀; MMUE G7605.2242 • 1♀; MMUE G7605.2222 • 1♀; MMUE G7605.2113 • 1♀; MMUE G7605.2255 • 1♀; MMUE G7605.2253 • 1♀; RBINS G7605.2243 • 1♂,1♀; Pyrénées Orientales, Ville-Franche-de- Conflent; 750 m a.s.l.; 6 Jun. 1982; Dick Jones leg.; epigyne dissected; MMUE G7605.975.

Other material examined
FRANCE • 2♂♂; Ariège, vallée d'Auzat (D108), just after road to Artiès; 1000 m a.s.l.; 29 May 1991; D. Jones leg.; on abandoned building; CJVK G7605.2257 • same data as previous: 1♀; CJVK G7605.2256 • 1♀; CJVK G7605.2252.

Etymology

The species epithet is a patronym in honour of the arachnologist and hymenopterologist Dick Jones (1943-2017, also see SMITH, 2018), who collected all the specimens and who was the first person to study and illustrate them.

Diagnosis

S. dickjonesi sp. nov. is closest to *S. koeni* sp. nov. but differs from it by the more slender theridiid tegular apophysis with a narrow tip as seen in ventral view, while in *S. koeni* sp. nov. the theridiid tegular apophysis is very robust and broad with a straight and blunt end in ventral view. Moreover, in ventral view, the terminal part of the embolus of *S. dickjonesi* sp. nov. is not as sharply pointed as in *S. koeni* sp. nov. and the conductor is not apically indented (Figs. 3 B, E; 9 B, E),
Females of *S. dickjonesi* sp. nov. differ from *S. koeni* sp. nov. by the central atrium of the epigyne which is posteriorly bordered by a transverse, sausage-shaped heavily sclerotised cavity (*vs*. a very thick sclerotised posterior rim without cavity in *S. koeni* sp. nov.), and by the spermathecae which are further apart (Figs. 5 A-D; 6 A, C, E, F), closer in the latter (Fig. 10 A-D).

Description

Male
Measurements. TL 4.20, CL 1.70, CW 1.45, Fe I 2.60, Ti I 2.00.
Prosoma. Carapace yellow-brown with thin darker border, covered with radiating streaks of fine warty granulations, except for cephalic bulge which is smooth. Cephalic bulge prominent, with grey streaks running in anterior direction. Transverse fovea deep, mottled with grey (Fig. 3 H). Clypeus vertical, height 4x diameter of AME, covered with fine warty granulations. Sternum shield-shaped, smooth, longer than wide, extending between all coxae with pointed triangles. Sternum colour brown densely mottled with black, with black border. Labium subtrapezoidal, as long as wide, brown suffused with black. Endites subrectangular, yellow-brown, anteriorly with dark serrula. Chelicerae with one anterior tooth, long and slender, yellow-brown. Cheliceral fangs short.
Eyes. AER dorsally recurved, PER dorsally slightly procurved. Lateral eyes on common tubercle. Anterior eyes equidistant, ALE similar in size to posterior eyes, pearly white. AME smaller, dark. Posterior eyes subequal and equidistant, pearly white. All eyes ringed with black.
Opisthosoma. Abdomen oval, dorsally dark chocolate brown with a white anterior crescent, a white central longitudinal bar consisting of five consecutive trapezoids or triangles and two lateral rows of interconnected white patches (Fig. 3 H). Ventral side brown with light yellow book lung covers anterior of epigastric furrow, chocolate brown with central large subtrapezoidal white spot posteriorly. Spinnerets pale yellow.
Legs. Pale yellow, slender, femora and tibiae with faint darker annulations. Ventral side of femora without warts. Leg formula 1423.
Palp Length Pti 0.40, Length Cy 0.55. Cymbium longer than tibia. TTA long, sturdy, rather slender, with curved, pointed tip. Conductor transparent, leaf-shaped, with smooth border. Embolus with a flat, flag-shaped basal part having an EA with a rl basal hump and a thin, needle-like, almost straight, blunt-tipped terminal part. Medium apophysis sausage-shaped, circling pl and ve part of tegulum (Figs. 3 A-G, 4 A-E).

Female
Measurements. (n = 5) TL 3.50 – 5.50; CL 1.60 – 2.20; CW 1.45 – 1.85; Fe I 2.47 – 3.13; Ti I 2.21 – 2.80, width of transversal epigynal cavity 0.25 – 0.32.
Paratype specimens used for description: MMUE G7605.2243, CJVK G7605.2256.
Prosoma. Carapace yellow-brown with darker border, provided with four radiating single lines of fine warty granulations. Cephalic bulge prominent, smooth, covered with thin forward pointing hairs. Transverse fovea deep (Fig. 5 E). Clypeus vertical height 3x diameter of AME, smooth. Sternum shield-

shaped, smooth, longer than wide, extending between all coxae with blunt triangles. Sternum colour brown densely mottled with black, with black border. Labium subtrapezoidal, as long as wide, brown suffused with black. Endites sub-rectangular, brown, anteriorly with dark serrula (Fig. 5 F). Chelicerae with one anterior tooth, long and slender, yellow-brown. Cheliceral fangs short.
Eyes. As in male.
Opisthosoma. Abdomen oval, colour dorsally as in male (Figs. 5 E, 6 D). Ventral side chocolate brown with light yellow book lung covers anterior of epigastric furrow, chocolate brown with central large egg-shaped white spot posteriorly (Figs. 5 F, 6 B). Spinnerets yellow-brown.
Legs. Yellow-brown, slender, femora and tibiae with faint darker annulations. Ventral side of femora without warts. Leg formula 1423.
Epigyne. With a shallow, egg-shaped central atrium posteriorly bordered by a very prominent, heavily sclerotised sausage-shaped transversal cavity situated at the posterior rim (Figs. 5 A, C; 6 A, E).
Vulva. Tear-shaped ST separated by their diameter. Short, posterior CD run in central direction (Figs. 5 B, D; 6 C, F).

Variation

4 additional male specimens: TL 3.50 – 4.00; CL 1.67 – 1.82; CW 1.37 – 1.50; Fe I 2.40 – 2.64; Ti I 2.07 – 2.24. Palp, 4 additional specimens: Pti 0.39 – 0.45; Cy 0.54 – 0.59.

Ecology

Collected in mid-altitude localities (600 – 1000 m). Males found adult in January and June, females in April and June. Following breeding in captivity, adult males were obtained from March until October, females from May until November.

Distribution

Known from the South of France (Fig. 44).

***Steatoda ingeae* Van Keer sp. nov.**
(Figs. 7 A-I, 8 A-F, 45)

Material examined

Holotype
MOROCCO • ♂; Agadir, Anza, 7 km N of Agadir; 50 m a.s.l.; 3 Feb. 1996; J. Van Keer leg.; hand catch under stones in *Euphorbia* vegetation; RBINS.

Paratypes
MOROCCO • 1♂; 3♀♀; same data as for holotype.

Other material examined
MOROCCO • 5♂♂, 9♀♀; Agadir, Anza, 7 km N of Agadir; 50 m a.s.l.; 3 Feb. 1996; J. Van Keer & R. Bosmans leg.; hand catch under stones in *Euphorbia* vegetation; CJVK 1556, CRB • 2♀♀; Agadir, Aourir, 2 km E and 12 km N of Agadir; 75 m a.s.l.; 3 Feb. 1996; J. Van Keer & R. Bosmans leg.; hand catch under stones near river; CJVK 1557, CRB • 1♀; Agadir, Ida Outamane, road from Cap Rhiv to Taghazaoute; 55 m a.s.l.; 28 Apr. 2012; R. Bosmans leg.; hand catch under stones near the sea; CRB • 1♂, 2♀♀; Taroudant, between Aoulouz and Taliouine; 600 m a.s.l.; 4 Feb. 1996; J. Van Keer & R. Bosmans leg.; hand catch under stones in *Sideroxylon spinosum* steppe; CJVK 1560, CRB • 2♀♀; Taroudant, Tanguerfa; 400 m a.s.l.; 4 Feb. 1996; R. Bosmans leg.; hand catch in *Sideroxylon spinosum* steppe; CRB • 1♂, 2♀♀; Taroudant, Ingherm; 1790 m a.s.l.; 24 Apr. 2012; J. Van Keer & R. Bosmans leg.; hand catch under stones in steppe with almond trees; CJVK 3121, CRB • 1♂,1♀; Ouarzazate, vallée du Drâa, 15

km E of Agdz; 850 m a.s.l.; 5 Feb. 1996; J. Van Keer & R. Bosmans leg.; hand catch under stones in palmyards; CJVK 1563, CRB • 1♂,1♀; Ifrane, S of Azrou; 1450 m a.s.l.; 7 Feb. 1996; R. Bosmans leg.; hand catch in litter and under stones in dense *Quercus ilex* forest; CRB • 2♂♂, 5♀♀, 2 juveniles; Chichaoua, Argaba N; 9 Feb. 1996; J. Van Keer & R. Bosmans leg.; hand catch under stones along rivulet in *Sideroxylon spinosum* steppe; CJVK 1583, CRB • 2♀♀; Tiznit, barrage Youssef-Ben-Tachfine; 100 m a.s.l.; 27 Apr. 2012; J. Van Keer leg.; hand catch under stones in steppe; CJVK 3129 • 1♂; Tiznit, Aït-Ou-Mrbete S, dam on Oued Massa; 80 m a.s.l.; 27 Apr. 2012; J. Van Keer leg.; hand catch under stones along river; CJVK 3130.

Etymology

The species is named in honour of the first author's wife Inge, for her unconditional love and support throughout the years.

Diagnosis

Steatoda ingeae sp. nov. is most related to *S. concolor*, but the theridiid tegular apophysis of the male palp is slimmer and more curved. The shape and orientation of the bifid tip of the theridiid tegular apophysis differ from that of *S. concolor*. The embolus is positioned differently and almost straight in ventral view (Fig. 7 B, F), while *S. concolor* has a more curved embolus (Fig. 20 B, F). Females have a bulging epigyne with a rather small posterior triangular cavity containing the copulatory entrances and a dark, chitinised, horizontally oriented oval plate anteriorly (Fig. 8 A, C). In the vulva, the distance between the exterior edges of the spermathecae is twice the width of the triangular cavity and the bent copulatory ducts are almost touching along the midline (Fig. 8 B, D). *S. concolor* has a much wider triangular cavity, as wide as the distance between the exterior edges of the spermathecae, the spermathecae being clearly visible through its integument while the copulatory ducts are not touching (Fig. 21 A-D). The abdomen of *S. ingeae* sp.nov. is dorsally dark brown with a median white herringbone pattern (Figs. 7 I, 8 E), while *S. concolor* has a cream abdominal dorsum with two parallel longitudinal rows of dark spots and a few dark lateral ones (Figs. 19 A, 20 H, 21 E).

Description

Male

Measurements. TL 3.70, CL 1.62, CW 1.30, Fe I 2.14, Ti I 1.91.

Prosoma. Carapace oval, yellow-brown, covered with fine warty granulations (Fig. 7 I). Cephalic bulge not prominent. Transverse fovea deep. Clypeus vertical, height four times diameter of AME, covered with few fine warty granulations. Sternum shield-shaped, longer than wide, yellow-brown with black border, covered with warty granulations and extending between coxae IV. Labium sub-trapezoidal, as long as wide, yellow-brown. Endites sub-rectangular, yellow-brown, with dark anterior serrula. Chelicerae yellow-brown, long and slender, with one anterior tooth. Cheliceral fangs short.

Eyes. Anterior eye row recurved, PER straight in do view. Anterior eyes equidistant, ALE similar in size to posterior eyes, pearly white, AME slightly smaller than others, dark. Posterior eyes equidistant, pearly white. All eyes ringed with black.

Opisthosoma. Abdomen oval, dark brown dorsally with a white anterior arch and a median, longitudinal bar indented like a herringbone (Fig. 7 I). Lateral sides brown with a few white spots. Ventral side beige with two faint brown longitudinal spots and a median white spot. Booklung covers pale yellow, spinnerets beige.

Legs. Pale yellow, slender, femora and tibiae with faint darker annulations. No warts on ve side of femora. Leg formula 1423.

Palp. Length Pti 0.28, Length Cy 0.49. Cymbium longer than tibia. Theridiid tegular apophysis long, rather slender, with curved bifid tip (Fig. 7 C, H). Embolus with a large, flat, semicircular basal part and thin, needle-like, rather straight and sharp-tipped terminal part. Conductor membranous with a bluntly rounded tip reaching as far as tip of TTA (Fig. 7 A-H).

Female

Measurements. (n = 5) TL 4.00 – 4.65; CL 1.42 – 1.60; CW 1.15 – 1.37; Fe I 1.91 – 2.07; Ti I 1.65 – 1.88, width of epigynal triangular cavity 0.11 – 0.13.

Paratype specimens used for description: RBINS 1556, CJVK 1557.

Prosoma. Carapace yellow-brown to brown, suffused with black. Carapace border suffused with dark brown. Smooth cephalic bulge not prominent and covered with fine hairs pointing in anterior direction. Transverse fovea deep. Clypeus vertical, smooth, height three times diameter of AME. Sternum shield-shaped, smooth, longer than wide, extending between coxae IV, yellow-brown to brown, densely mottled black, border black (Fig. 8 F). Labium subtrapezoidal, as long as wide, yellow-brown. Endites sub-rectangular, yellow-brown, with anterior dark serrula. Chelicerae yellow-brown, long and slender, with one anterior tooth. Cheliceral fangs short.

Eyes. As in male.

Opisthosoma. Abdomen oval, dorsally dark chocolate brown with a white anterior arch, a white median, longitudinal bar with three lateral horizontal projections on each side, having the aspect of a herringbone (Fig. 8 E). Lateral sides with two large white spots. Ventral side chocolate brown with a white, longitudinal central spot (Fig. 8 F). Booklung covers light yellow, spinnerets pale yellow.

Legs. Pale yellow, slender. Femora and distal part of tibiae with faint darker annulations. No warts on ve side of femora. Leg formula 1423.

Epigyne. Epigyne rather small with a posterior triangular cavity containing the copulatory entrances, not bordering the epigastric furrow (Fig. 8 A, C). A dark, chitinised, horizontally oriented oval plate in anterior half. Spermathecae poorly visible through integument.

Vulva. Sclerotised anterior arch of triangular cavity half the width of the distance between the exterior edges of the ST. Copulatory ducts curved, the arch running in anterior direction, almost touching along the midline, ducts partly disappearing behind the oval chitinised plate (Fig. 8 B, D).

Variation

4 additional male specimens: TL 3.25 - 3.80; CL 1.42 - 1.82; CW 1.05 - 1.45; Fe I 1.68 - 2.11; Ti I 1.41 - 1.84. Palp, 4 additional specimens: Pti 0.23 – 0.28; Cy 0.42 – 0.51.

Ecology

Collected in a wide range of altitudes (50 – 1790 m a.s.l.). Practically all specimens were found under stones in semi-arid habitats. Adult males and females were collected in February and April.

Distribution

Known mainly from southern Morocco (Fig. 45).

***Steatoda koeni* Van Keer sp. nov.**

(Figs. 9 A-G, 10 A-F, 44)

Material examined

Holotype

MOROCCO • ♂; Ifrane province; 5 km S of Azrou; 1450 m a.s.l.; 7 Feb. 1996; J. Van Keer leg.; hand catch in litter and under stones in dense *Quercus ilex* forest; RBINS.

Paratypes

MOROCCO • 2♀♀; same data as for holotype; RBINS.

Other material examined

MOROCCO • 1♀, 4 juveniles; same data as for holotype; CJVK 1573.

Etymology

This species is named in honour of the first author's brother, Koen, for his unwavering support and collaboration we've had in the world of spiders since our childhood.

Diagnosis

Males are closely related to *Steatoda dickjonesi* sp. nov. but can be separated by the very robust and broad TTA which ends practically straight and blunt (Fig. 9 B), in contrast to the theridiid tegular apophysis of *S. dickjonesi* which is more S-shaped curved and ends much more pointed distally (Figs. 3 B, 4 B). Males can further be distinguished from other species by the broad base of the embolar apophysis which has a blunt hump retrolaterally (also present in *S. castanea*, *S. dickjonesi* sp. nov., *S. ingeae* sp. nov and *S. triangulosa*).

Female epigynes can be separated by the semi-rectangular central depression posteriorly bordered by a dark, crescent shaped, thickened, sclerotised rim (Fig. 10 A, C), while *S. dickjonesi* sp. nov. has an epigyne with a sausage-shaped cavity which is mainly sclerotised anteriorly (Fig. 5 A, C).

Description

Male

Measurements. TL 5.00; CL 2.25; CW 1.70; Fe I 2.97; Ti I 2.50.

Prosoma. Chelicerae, sternum, labium and gnathocoxae deep brown, sternum blackish at edges, longer than wide, extending between coxae IV. Carapace with warty granulations, fovea deep and round. Chelicerae relatively slender with one small promarginal tooth.

Eyes. Outlined with black rings. Anterior eye row recurved, posterior row straight.

Legs. Yellow-brown with some darker areas in all segments except tarsi. Femora of all legs covered with small warts on ventral side. Leg formula: 1423.

Opisthosoma. Oval, longer than wide, purplish black with white broad anterior belt, extending over upper sides of dorsal side and a median white stripe connected with the anterior belt. Further three broad lateral white belts covering the dorsal side of the opisthosoma (Fig. 9 G). Lateral side purplish black with two white spots. Venter with large white median spot not reaching the spinnerets. Lung covers and spinnerets light yellow.

Palp. Length Pti 0.50, Length Cy 0.57. Cymbium as long as palpal tibia. TTA at prolateral side very robust, broad, short ending, straight distally (Fig. 9 A, D); EA at retrolateral side, base very wide with hump extending retrolaterally (Fig. 9 C, F). Embolus rather short and straight not reaching tip of cymbium; wide at base (Fig. 9 B, E). Conductor membranous, short, semicircular with rounded tip.

Female

Measurements. (n = 3) TL 5.40 – 6.60; CL 2.05 – 2.40; CW 1.70 – 2.00; Fe I 2.75 – 3.00; Ti I 2.40 – 2.60. Paratype specimens used for description: RBINS 1573.

Prosoma. Chelicerae, sternum, labium and gnathocoxae brown, sternum blackish at edges, extending between coxae IV (Fig. 10 F). Carapace smooth, black on the edge, with dark stretch marks and shallow fovea (Fig. 10 E).

Eyes. Surrounded with black rings, anterior eye row recurved, posterior row straight.

Legs. As in male but femora of all legs without small warts ventrally. Leg formula: 1,4,2,3.

Opisthosoma. Oval, slightly longer than wide, purplish black with a wide anterior belt and a row of three median white spots of which one small and two large ones reaching the middle of the opisthosoma (Fig. 10 E). Venter with large white median spot not reaching spinnerets (Fig. 10 F). Lung covers and spinnerets beige.

Epigyne. Width of epigynal rim 0.30, semi-rectangular central depression posteriorly bordered by a dark, crescent-shaped, thickened rim (Fig. 10 A, C). Crescent-shaped rim with small anchoring grooves at lateral sides.

Vulva. Spermathecae rather large with short, small horizontal copulatory ducts (Fig. 10 B, D).

Remark

The epigynes of *S. latifasciata* (Figs. 28 A-B; 29 A-B) and *S. koeni* (Fig. 10 A, C) are very different, while the vulvae are quite similar (Figs. 28 C-D; 29 C-E; 10 B, D).

Ecology

Specimens were found in litter and under stones in *Quercus ilex* forest. Both male and females were collected in February.

Distribution

Only known from the type locality in Morocco (Fig. 44).

***Steatoda verae* Van Keer sp. nov.**

(Figs. 11 A-G, 12 A-E, 13 A-F, 14 A-J, 44)

Material examined

Holotype

SPAIN • ♂; Almeria province, Sierra de Alhamilla; 560 m a.s.l.; 9 Apr. 1988; D. Jones leg.; MMUE G7605.982.

Paratypes

SPAIN same data as for holotype: • 6♂♂; MMUE G7605.978 • 6♂♂; MMUE G7605.977 • 1♂; MMUE G7605.936 • 1♂; MMUE G7572.17127 • 1♀; MMUE G7605.983 • 1♀; MMUE G7605.980 • 1♀; MMUE G7605.976 • 1♀; MMUE G7605.981 • 1♀; MMUE G7605.979 • 2♂♂; Almeria province, Sierra de Alhamilla; 560 m a.s.l.; Apr. 1991; D. Jones leg.; RBINS G7605.1127 • 3♂♂; Almeria province, Sierra de Alhamilla; 560 m a.s.l.; Apr. 1992; D. Jones leg.; MMUE G7605.1128 • 1♂; Almeria province, Sierra de Filabres; 1800 m a.s.l.; 8 Apr. 1990; D. Jones leg.; under stones and in litter; MMUE G7572.14157 • 1♂; Almeria province, Los Escullos, Punta de la Loma Pelada; 5 - 30 m a.s.l.; 5 Apr. 1990; D. Jones leg.; MMUE G7605.1133 • 1♀; same data as previous; MMUE G7605.1125 • 1♀; Almeria province, Sierra de Alhamilla; 560 m a.s.l.; 4 Apr. 1990; D. Jones leg.; RBINS G7605.1126 • 2♀♀; same data as previous; MMUE G7572.17126.

Other material examined

SPAIN • 1♂; Almeria province, Los Escullos, Punta de la Loma Pelada; 5 - 30 m a.s.l.; 5 Apr. 1990; D. Jones leg.; CJVK G7605.1129 • 1♀; same data as previous; CJVK G7605.1130.

Etymology

The first author dedicates this beautiful species to his mother Vera for her unconditional love and continuing support throughout his life.

Diagnosis

Males are closely related to *Steatoda ifricola* but differ by the shape of theridiid tegular apophysis which is wide, robust and apically blunt in prolateral view (Figs. 11 A, D; 12 A), while theridiid tegular apophysis in *Steatoda ifricola* is very wide at the base, curved and pointed distally (Fig. 40 A, D). In ventral view theridiid tegular apophysis is hook-shaped (Figs. 11 B, E; 12 B, D). Females can be distinguished from all its congeners by the epigyne consisting of a large sclerotised heart-shaped pit without septum, posteriorly bordered by a thin dark sclerotized rim (Figs. 13 A, C; 14 E, H).

Description

Male

Measurements. TL 3.45, CL 1.50, CW 1.25, Fe I 2.07, Ti I 1.81.

Prosoma. Chelicerae, labium and gnathocoxae deep brown, sternum brown, speckled with black and bordered by a thin black line, extending between coxae IV. Carapace with warty granulations, fovea rather deep and transverse (Fig. 11 G). Chelicerae relatively long and slender with one promarginal tooth.

Eyes. Eyes outlined in black, anterior row recurved, posterior row straight.

Legs. Light yellow-brown without annulations, femora of all legs without warts on ventral side. Leg formula: 1423.

Opisthosoma. Oval, longer than wide, purplish black with white anterior belt extending over upper sides of dorsal side. Median white central dentated band running longitudinally, just in front of spinnerets accompanied with three white dots on lateral side of abdomen (Fig. 11 G). The pattern on the dorsal side is highly variable and can range from light to dark. Ventral side purplish black with one large central white spot. Spinnerets light yellow.

Palp. Length Pti: 0.32, length Cy: 0.59. Cymbium clearly longer than palpal tibia. TTA wide and robust in pl view, apically curved, bluntly ended, hook-shaped in ve view. Conductor membranous with small pointed tip extending a bit above cymbium. Embolus long, describing half a circle and reaching top of cymbium (Figs. 11 A-F; 12 A-E).

Female

Measurements. (n = 5) TL 3.50-5.05; CL 1.47-1.80; CW 1.32-1.70; Fe I 2.40-2.87; Ti I 1.95-2.37, width of epigynal pit 0.22-0.25.

Paratype specimens used for description: MMUE G7605.983.

Prosoma. Carapace smooth with shallow pit (Fig. 13 E). Chelicerae, labium, gnathocoxae and sternum yellow-brown to brown. Sternum mottled with black, bordered by thin black line not as pronounced as in male, extending between coxae IV (Fig. 13 F).

Eyes. Anterior eye row slightly recurved, posterior row straight.

Legs yellow-brown without annulations. Leg formula: 1423.

Opisthosoma. Colour and pattern as in males (Figs. 13 E-F; 14 A-B).

Epigyne. Consisting of a large circular sclerotised pit without septum. Internal structures visible through tegument. Posterior side of circular pit bordered by a sclerotized rim not reaching epigastric furrow (Figs. 13 A, C; 14 E, H).

Vulva. Spermathecae large, round, dark brown and separated by two broad copulatory ducts describing a circular loop (Figs. 13 B, D; 14 C, J).

Variation

4 additional male specimens: TL 2.97-3.70; CL 1.22-1.72; CW 1.02-1.42; Fe I 1.80-2.42; Ti I 1.61-2.15. Palp, 4 additional specimens: length Pti: 0.27-0.39, length Cy: 0.51-0.62

Ecology

Specimens have been collected under rocks and litter both at low (5–30 m) and high altitudes (1800 m). Both males and females were collected in April.

Distribution

So far only known from Spain, in some localities in the province of Almería (Fig. 44).

Remarks on other species

***Steatoda albocincta* (Lucas, 1846)**
(Fig. 15 A-H)

Theridion albocinctum LUCAS, 1846: 262, Pl. 16, fig. 4 (f)
Lithyphantes incompositus DENIS, 1957: 294, figs. 18-19 (f) **Syn. nov.**
Steatoda incomposita KNOFLACH, 1996: 141, figs. 1-5, 9-11 (f, Dm); LE PERU, 2011: 465, figs. 782, 791 (m,f); GAYMARD & LECIGNE, 2018: 16, fig. 10A-C (m).
Steatoda albocincta LEDOUX & RAPHAEL, 1999: 6; LEDOUX *et al.*, 2004: 5; LEDOUX & EMERIT, 2010: 6; BOSMANS & VAN KEER, 2012: 151. (**spec. reval**., not accepted by PLATNICK 2013 until WSC 2024)

Material

Holotype
ALGERIA • ♀; Province Sétif, in the neighbourhood of Sétif; under stones; H. Lucas leg.; MNHN 165412; not examined.

Material examined
FRANCE • 3♂♂, 4♀♀; Bouches-du-Rhône, Saint-Antonin-sur-Bayon, Site Sainte-Victoire; 402 m a.s.l.; 4 May 2015; J. Van Keer leg.; handcatch under stones; CJVK 3273 • 1♂; Var, Plan-d'Aups-Sainte-Baume; 683 m a.s.l.; 6 May 2015; J. Van Keer leg.; stones in wasteland; CJVK 3280 • 2♀♀; Hérault, Clermont-l'Hérault; 174 m a.s.l.; 13 May 2015; J. Van Keer leg.; handcatch in stone field; CJVK 3295 • 1♀; Pyrénées Orientales, Baixas; 130 m a.s.l.; 17 May 2015; J. Van Keer leg.; under stones on slope; CJVK 3299 • 2♂♂, 5♀♀; Pyrénées Orientales, Treilles, D27; 153 m a.s.l.; 26 May 2015; J. Van Keer leg.; stones in old quarry; CJVK 3318 • 1♀; Aude, La Palme, Quarry "Roumany"; 11 m a.s.l.; 9 May 2015; J. Van Keer leg.; handcatch under stones; CJVK 3286 • 1♂, 1♀; Corsica, Haute-Corse, Pinzalone; 246 m a.s.l.; 31 May 1999; J. & K. Van Keer leg.; stones in quarry along Fium'Orbo river; CJVK 1913.
PORTUGAL • 1♀; Province Vila, West Bustelo; 580 m a.s.l.; 6 May 2017; J. Van Keer leg.; stones in grassland; CJVK 3394.
ITALY • 1♂, 4♀♀; Sardinia, Nuoro, NW Lanusei, Lago Alto Del Flumendosa; 590 m a.s.l.; 13 May 1997; J. & K. Van Keer leg.; under stones between herbs; CJVK 1754 • 1♀; Sardinia, Nuoro, Villanova Strisaili; 845 m a.s.l.; 23 May 1997; J. & K. Van Keer leg.; stones in grassland; CJVK 1782.
SPAIN • 3♀♀; Province Murcia, Totana, El Paretón; 234 m a.s.l.; 15 Jun. 2004; J. Van Keer leg.; stones in fallow land; CJVK 2380 • 3♂♂, 8♀♀; Province Murcia, Mazarrón, Camposol; 141 m a.s.l.; 16 Jun. 2004; J. Van Keer leg.; stones in maquis; CJVK 2382.
MOROCCO • 5♂♂, 3♀♀; Province Fès-Boulemane, West Fès, Douyet; 375 m a.s.l.; no date; S. Boksch leg.; pitfalls in wheat fields; CRB (BOSMANS & VAN KEER 2012) • 1♀; Meknès-Afilalt, Azrou; 1250 m a.s.l.; 11 May 1984; R. Bosmans leg.; stones in wet grassland along a rivulet South of the town; CRB (BOSMANS & VAN KEER 2012).

Comments

In her excellent redescription of *S. incomposita*, KNOFLACH (1996) already suggested that an older synonym might exist. In his work of 1846, LUCAS described *Theridion albocinctum* Lucas, 1846, a conspicuous species which description and drawing of the habitus fit perfectly with *Steatoda albomaculata* (De Geer, 1778). LEDOUX & RAPHAEL (1999) revalidated *Theridion albocinctum* Lucas, 1846 and placed it in *Steatoda*, until then considered a synonym of *S. albomaculata* (De Geer, 1778). They consider *Steatoda incomposita* (Denis, 1957) a junior synonym of *Steatoda albocincta* (Lucas, 1846). BOSMANS & VAN KEER (2012) followed the statement of LEDOUX & RAPHAEL (1999) that *Steatoda albomaculata* (De Geer, 1778) does not occur in the Western Mediterranean and cannot be a synonym of *Steatoda albocincta* (Lucas, 1846). We verified material from Southern France, Corsica, Sardinia,

Spain, Portugal and Morocco, and all belong to *Steatoda albocincta* (Lucas, 1846), where it replaces *Steatoda albomaculata* (De Geer, 1778). The synonymisation already suggested by LEDOUX & RAPHAEL (1999) is supported here. We conclude that *Steatoda incomposita* (Denis, 1957) is a junior synonym of *Steatoda albocincta* (Lucas, 1846). It should be noted that *Theridion albocinctum* Urquhart, 1892 is a valid species from New Zealand (WSC 2024).

Ecology

Specimens were found under stones in dry habitats with scarce vegetation and in a wide range of altitudes (11-1250 m a.s.l.). Males were collected in May, females in May and June.

Distribution

The species is currently known from France, Corsica, Spain, Portugal, Sardinia, Morocco and Algeria.

***Steatoda albomaculata* (De Geer, 1778)**
(Figs. 16 A-L, 17 A-H, 18 A-F)

Aranea albo-maculata DE GEER, 1778: 257, pl. 15, f. 2-4 (D).
Aranea albolunata MARTINI & GOEZE, 1778: 301 (D) [urn:lsid:nmbe.ch:spidersp:059862].
Aranea maculata OLIVIER, 1789: 209 (superfluous new name for *Aranea albomaculata* De Geer) [urn:lsid:nmbe.ch:spidersp:059863].
Aranea albolunata PANZER, 1804: 206, pl. 255, f. 6 (in Schäffer, 1791).
Theridion maculatum WALCKENAER, 1805: 74.
Theridion dispar SUNDEVALL, 1831: 13, 1832: 120 (Dm) [urn:lsid:nmbe.ch:spidersp:059864].
Theridion albomaculatum HAHN, 1833: 79, f. 59 (f).
Theridion anchorum HAHN, 1836: 1, pl. 29, f. c (Df) [urn:lsid:nmbe.ch:spidersp:059865].
Eucharia corollata C. L. KOCH, 1837: 8 (misidentified).
Phrurolithus corollatus C. L. KOCH, 1839: 100, f. 504-505 (mf; misidentified).
Asagena corollata C. L. KOCH, 1840: 401 (misidentified).
Theridion maculatum WALCKENAER, 1841: 293.
Theridion albocinctum LUCAS, 1846: 262, pl. 16, f. 4 (Df; N.B.: considered a separate, valid species by some authors, see BOSMANS & VAN KEER, 2012: 151).
Steatoda corollata THORELL, 1856: 85 (misidentified, regarded *Steatoda corollata* as the valid name).
Theridion albomaculatum WESTRING, 1861: 186.
Eucharia albomaculata MENGE, 1869: 264, pl. 49, f. 155 (m).
Lithyphantes corollatus THORELL, 1869: 94 (misidentified).
Lithyphantes corollatus HANSEN, 1882: 36, pl. 2, f. 12 (mf, misidentified).
Lithyphantes corollatus KEYSERLING, 1884: 129, pl. 6, f. 81 (mf, misidentified).
Lithyphantes corollatus CHYZER & KULCZYŃSKI, 1894: 41, pl. 2, f. 6 (mf, misidentified).
Lithyphantes corollatus BECKER, 1896: (2): 117, pl. 25, f. 1 (mf, misidentified).
Lithyphantes corollatus BÖSENBERG, 1902: 118, pl. 10, f. 149 (mf, misidentified).
Steatoda corollata EMERTON, 1902: 121, f. 285 (f, misidentified).
Lithyphantes corollatus FEDOTOV, 1912: 65, f. 6 (f, misidentified).
Lithyphantes albomaculatus SIMON, 1914: 282, 304 (S of *Aranea maculata*, *Theridion dispar*, *T. anchorum* and of misidentified *Lithyphantes corollatus*).
Lithyphantes corollatus infuscatus SCHENKEL, 1925: 288, f. 5 (Df). **New syn**.
Lithyphantes corollatus infuscatus SCHENKEL, 1926: 306, f. 1 (Dm). **New syn**.
Lithyphantes albomaculatus WIEHLE, 1934: 72, f. 1, 4 (mf).
Lithyphantes albomaculatus WIEHLE, 1937: 200, f. 222-227 (mf).
Lithyphantes albomaculatus ROEWER, 1942: 405 (S of *Aranea albolunata*).
Lithyphantes albomaculatus KASTON, 1948: 78, f. 47-50 (mf).

Lithyphantes albomaculatus LOCKET & MILLIDGE, 1953: 55, f. 37A-C (mf).
Steatoda albomaculata LEVI, 1957: 396, f. 56-65 (mf).
Lithyphantes albomaculatus AZHEGANOVA, 1968: 51, f. 86, 98 (mf).
Lithyphantes albomaculatus MILLER, 1971: 186, pl. XXXII, f. 1-3 (mf).
Steatoda albomaculata PALMGREN, 1974: 38, f. 10.5-8, 17 (mf).
Steatoda albomaculata YAMAKAWA & KUMADA, 1979: 5, f. 3-6 (mf).
Steatoda albomaculata LEVY & AMITAI, 1982: 15, f. 1-9 (mf).
Steatoda albomaculata HU, 1984: 164, f. 170.1-3 (f).
Steatoda albomaculata ROBERTS, 1985: 178, f. 79d (mf).
Steatoda albomaculata ZHU & SHI, 1985: 101, f. 87a-d (m).
Steatoda albomaculata YAGINUMA, 1986: 39, f. 21.6 (m).
Steatoda albomaculata ZHANG, 1987: 109, f. 89.1-4 (m).
Steatoda albomaculata HU & WU, 1989: 128, f. 101.1-5 (mf).
Lithyphantes albomaculatus IZMAILOVA, 1989: 88, f. 67 (f).
Steatoda albomaculata CHIKUNI, 1989: 40, f. 47 (mf).
Steatoda albomaculata TANG & SONG, 1990: 48, f. 1A-B (f).
Steatoda albomaculata HEIMER & NENTWIG, 1991: 298, f. 799 (mf).
Steatoda albomaculata ROBERTS, 1995: 274, f. (mf).
Steatoda albomaculata PAIK, 1995: 5, f. 1-7 (f).
Steatoda albomaculata KNOFLACH, 1996: 142, f. 6-8, 12-21 (mf).
Lithyphantes albomaculatus MCHEIDZE, 1997: 184, f. 367-369 (mf).
Steatoda albomaculata ZHU, 1998: 341, f. 228A-E (mf).
Steatoda albomaculata ROBERTS, 1998: 289, f. (mf).
Steatoda albomaculata LEVY, 1998: 50, f. 87-95 (mf).
Steatoda albomaculata SONG, ZHU & CHEN, 1999: 128, f. 67A-B, I-J (mf).
Steatoda albomaculata HU, 2001: 571, f. 385.1-3 (mf).
Steatoda albomaculata SONG, ZHU & CHEN, 2001: 104, f. 50A-E (mf).
Steatoda albomaculata YOSHIDA, 2001: 43, f. 43-45 (mf).
Steatoda albomaculata NAMKUNG, 2002: 130, f. 13.48a-b (mf).
Steatoda albomaculata PAQUIN & DUPÉRRÉ, 2003: 220, f. 2459-2461 (mf).
Steatoda albomaculata NAMKUNG, 2003: 132, f. 13.48a-b (mf).
Steatoda albomaculata YOSHIDA, 2003: 42, f. 75-77 (mf).
Steatoda albomaculata KNOFLACH & PFALLER, 2004: 137, f. 20d, 23a (mf).
Steatoda albomaculata ALMQUIST, 2005: 89, f. 112a-h (mf).
Steatoda albomaculata AGNARSSON, CODDINGTON & KNOFLACH, 2007: 346, f. 20-21 (m).
Steatoda albomaculata WUNDERLICH, 2008: 204, f. 55-58 (m).
Steatoda albomaculata YOSHIDA, 2009: 363, f. 57-58 (mf).
Steatoda albomaculata LE PERU, 2011: 463, f. 776, 791 (mf).
Steatoda albomaculata KAYA & UGURTAS, 2011: 149, f. 12-13 (mf).
Steatoda albomaculata FAÚNDEZ & CARVAJAL, 2016: 83, f. 1 .
Steatoda albomaculata VANUYTVEN, 2021: 9, f. 3a-b, A.13c, B.290 (m).
Steatoda albomaculata KIM, 2021: 133, f. 57A-H (mf).
Steatoda albomaculata ZHANG, PENG & ZHANG, 2022: 43, f. 23A-G (mf).
Steatoda albomaculata ZARIKIAN, 2022: 173, f. 7A-B (f).
Steatoda albomaculata TRIPATHI *et al*., 2023: 268, f. 1-14 (mf).

Material examined

Types
SWITZERLAND • 5♀♀, syntypes of *Lithyphantes albomaculatus infuscatus* from Switzerland, deposited in NMB; examined • 1♂, SWITZERLAND; Basel region, Schenkel leg.; NMB; examined.

Other material examined
BELGIUM • 3♀♀; Province Limburg, Lommel, Maatheide; 48 m a.s.l.; 12 Jul. 2008; J. Van Keer leg.; stones in heathland; CJVK 2857 • 5♂♂, 3♀♀; Province Antwerpen, Kalmthout, Kalmthoutse heide, Stappersven; 21 m a.s.l.; 27 May 2013; J. Van Keer leg.; stones in heathland; CJVK.

Comments

In 1925 SCHENKEL described a variation of *Lithyphantes corollatus* which he called *L. corollatus* var. *infuscata*. A year later he found and described the accompanying males in another paper (SCHENKEL, 1926). The differences he cites are very small in both sexes. We studied the syntypes of *Steatoda albomaculata infuscata* and compared them with series from Belgian populations. Habitus, colour and pattern are identical to the Belgian material (Fig. 18 A-F). Measurements of total width of the epigyne, width of median furrow and width between anchoring grooves show overlap (Table 1). The median furrow Schenkel describes as heart-shaped also occurs in most Belgian specimens (Fig. 17 A, C, E, G) and may also differ due to the positioning of the epigyne. The vulvae of both populations are almost identical with copulatory ducts equal in length and shape (Fig. 17 B, D, F, H). Males from Switzerland and Belgian specimens are identical. Length of palpal tibia and cymbium also show overlap between both populations (Table 2). The shape of the TTA of the Swiss specimen as described by SCHENKEL (1926) corresponds also to specimens present in the Belgian material (Fig. 16 A-C, E-F, H-I, K-L). Small variations of the TTA in Belgian material have been observed. After revising and comparing the Swiss syntypes with Belgian material one can make the conclusion that the differences can be traced back to the intraspecific variation of the genitalia. *Steatoda albomaculata infuscata* is considered a junior synonym of *Steatoda albomaculata* new syn.

Table 1: Overlapping size ranges (mm) of epigynal structures of *S. albomaculata.*

Species ♀	Total width epigyne	Width median furrow	Width between anchoring grooves
S. albomaculata var. *infuscata* (n = 5)	0.56 – 0.59	0.28 – 0.35	0.27 – 0.37
S. albomaculata (n = 6)	0.52 – 0.64	0.32 – 0.42	0.28 – 0.37

Table 2: Overlapping size ranges (mm) of male palpal structures of *S. albomaculata.*

Species ♂	Length of palpal tibia	Length of cymbium
S. albomaculata var. *infuscata* (n = 1)	0.27	1.12
S. albomaculata (n = 5)	0.27 – 0.34	1.02 – 1.15

***Steatoda concolor* (Caporiacco, 1933) stat. nov.**
(Figs. 19 A-E, 20 A-H, 21 A-F, 45)

Teutana triangulosa concolor CAPORIACCO, 1933: 322 (D subad.f)
Steatoda ephippiata VAN KEER & BOSMANS, 2010: 22, figs. 1-3 (m, misidentification)

Remark

In 2010, VAN KEER & BOSMANS described a pale coloured male from Tunisia as the unknown male of *S. ephippiata*, since they could not identify it as one of the known species. After examining the holotype of *S. triangulosa concolor*, a subadult female, it became clear that the male described by VAN KEER & BOSMANS (2010) is in fact *S. concolor*. Newly collected material from Tunisia and Algeria, both males and females, fully correspond to the holotype in colour and pattern. Therefore, we redescribe this

species here based on adult male and female specimens. Thus *S. triangulosa concolor* is elevated to species level and becomes a valid species, *S. concolor*.

Material examined

Holotype
LIBYA • subadult♀; Cufra, El Talab; 17 Jun. 1931; di Caporiacco leg.; in desert; MCSNG; examined.

Other material examined
ALGERIA • 1♀; El Bayadh, East Brézina; 800 m a.s.l.; 9 Feb. 1987; R. Bosmans leg.; hand captured under stones in steppe; CRB • 1♀; Kenchela, Djellal, Mt. Nementscha; 1400 m a.s.l.; 1 Mar. 1989; R. Bosmans leg.; hand captured under stones in wasteland; CRB.
TUNISIA • 1♀, 1 juvenile; Gov. Gabes, between Ain Tounina and Toujane; 16 Dec. 1999; R. Bosmans *leg*.; hand catch under stones in steppe; CJVK • 1♂; Gov. Gafsa, Gafsa Oasis; 300 m a.s.l.; 2 Mar. 2005; J. Van Keer leg.; hand catch under stones and in litter in oasis; CJVK 2436 • 1♂; Gov. Médenine, El Hallouf; 13 Dec. 1999; R. Bosmans leg.; hand catch under stones in scarce *Eucalyptus* plantation; CRB • 2♂♂, 3♀♀; Gov. Médenine, Ben Guerdene, Parc National de Sidi Toui; 22 Feb. 2022; G. Kmira leg.; hand catch under stones; Coll. ATVS, CJVK (1♂ "SUD AR.2022.66", 1♀ "SUD AR.2022.68") • 1♀; Gov. Médenine, Darghoulia; 28 m a.s.l.; 13-26 Jul. 1997; R. Bosmans leg.; under stones; CJVK 1799.

Diagnosis

Steatoda concolor stat. nov. is closely related to *S. ingeae* sp. nov. Males differ by the large, straight, bifid theridiid tegular apophysis which is barely curved apically (Fig. 20 A-B, E-F). When viewed from the retrolateral side, the shape of the embolus base differs from that of *S. ingeae* sp. nov. having a sloping anterior border (Fig. 20 D, G), *vs*. a horizontal one (Fig. 7 D, G). Females have a less bulging epigyne and a posterior triangular cavity that is much wider than in *S. ingeae* sp. nov. (Figs. 8 A, C; 21 A, C). The horizontally oriented anterior chitinised plate is much closer to the triangular cavity, as compared to *S. ingeae* sp. nov. *Steatoda concolor* can be further distinguished from all its congeners by the paler colour of the entire body. The dorsal side of the abdomen is cream with two parallel longitudinal rows of five or six dark dots, an additional two or three dark dots occur laterally (Figs. 20 H, 21 E).

Description

Male
Measurements. (n = 4) TL 3.40 – 4.60; CL 1.50 – 2.07; CW 1.12 – 1.82; Fe I 1.98 – 2.60; Ti I 1.65 – 2.31. Specimen used for description: CJVK SUD AR.2022.66.
Prosoma. Carapace pale yellow, covered with warty granulations (Fig. 20 H). Transverse fovea deep. Clypeus vertical, four times as high as diameter of AME, covered with a few fine warts. Sternum shield-shaped, longer than wide, extending between coxae IV, covered with warty granulations, uniformly pale yellow. Labium subtrapezoidal, as long as wide, pale yellow. Endites sub-rectangular, pale yellow, with a dark anterior serrula. Chelicerae pale yellow, long and slender, with one anterior tooth. Cheliceral fangs short.
Eyes. Anterior eye row recurved, PER straight from above. Anterior eyes equidistant, ALE similar in size to posterior eyes, all of them pearly white. Posterior eyes equidistant. Anterior median eyes slightly smaller than others, dark. All eyes ringed with black.
Opisthosoma. Abdomen oval, creamy white with two parallel longitudinal rows of five or six dark spots, lateral sides with two or three dark spots (Fig. 20 H). Ventral side of abdomen beige with a large white spot ranging from the epigastric furrow almost to the spinnerets. Booklung covers and spinnerets beige.
Legs. Slender, pale yellow, no darker annulations. No warts ve on femora. Leg formula 1423.
Palp. (n = 4) Pti 0.20 – 0.32; Cy 0.47 – 0.54. Cymbium longer than tibia. Theridiid tegular apophysis large and robust, almost straight, bifid distally (Fig. 20 A-C, E-F). Conductor membranous, slightly

longer than wide, with bluntly rounded, broad tip (Fig. 20 A-B, D-G). Embolus with a very robust basal section with a rl hump and with a thin curved terminal part (Fig. 20 D, G).

Female

Measurements. (n = 6) TL 3.75 – 4.85; CL 1.25 – 1.87; CW 1.10 – 1.52; Fe I 1.65 – 2.73; Ti I 1.38 – 2.31. Specimens used for description: Tunisia, Gabes, CRB, and Tunisia, Médenine, CRB (vulva).
Prosoma. Carapace smooth, without warty granulations, coloured as in male. Cephalic part covered with hairs pointing in anterior direction. Transverse fovea shallow (Fig. 21 E). Clypeus straight, covered with fine hairs. Sternum as in male, without warts but with fine black hairs. Labium, endites and chelicerae as in male (Fig. 21 F).
Eyes. As in male.
Opisthosoma. As in male. Spinnerets pale yellow.
Legs. As in male. Leg formula 1423.
Epigyne. Epigyne with posterior triangular cavity with width 0.15 – 0.23 and a dark chitinised horizontally oriented plate in anterior half. Sclerotised plate and triangular cavity close, contrary to *S. ingeae* sp. nov. where they are much farther apart (Figs. 8 A, C; 21 A, C). Spermathecae clearly visible through integument.
Vulva. Copulatory ducts curved, the arch running in anterior direction, not touching along the midline, ducts partly disappearing behind the oval chitinised plate. The anterior arch of the triangular cavity is as wide as the distance between the exterior edges of the ST (Fig. 21 B, D).

Ecology

Collected in low and mid-altitude localities (300 – 1400 m a.s.l.). All specimens were found under stones in semi-arid to arid habitats. Adult males and females were collected in February, March and December. The subadult female holotype was found in June.

Distribution

Known from Libya, Tunisia and Algeria (Fig. 45).

***Steatoda distincta* (Blackwall, 1859)**

Latrodectus distinctus BLACKWALL, 1859: 260 (Df)
Lithyphantes distinctus SIMON, 1883: 281

Material

Holotype
PORTUGAL • ♀, Madeira; 70 m a.s.l.; captured among herbs; not examined.

Comments

Latrodectus distinctus was described by BLACKWALL (1859: 260), based on a female collected at an altitude of about 60 m a.s.l. on Madeira. SIMON (1883: 281), in his overview of the arachnofauna of the Atlantic islands, cites the species as "*Lithyphantes (?) distinctus*", whence its later transfer to *Steatoda*. BLACKWALL (1859) describes the abdomen of the specimen as black with a yellowish white anterior arch, four median yellowish white median spots decreasing in size towards the posterior end and five lateral yellowish white spots on both lateral sides, a pattern reminiscent of *S. albocincta*. Unfortunately, the type specimen of *S. distincta* could not be located in NHM or OUM, despite various inquiries. The type specimen is most probably lost. *Steatoda distincta* is a *species inquirenda.* New searches on Madeira are needed.

***Steatoda ephippiata* (Thorell, 1875)**
(Fig. 22 A-F)

Lithyphantes ephippiatus THORELL, 1875: 63 (Df)
Lithyphantes ochraceus SIMON, 1908: 428 (Df)
Teutana argentea CAPORIACCO, 1933: 322, fig. 5 (Df)
Teutana argentea DENIS, 1966: 121, fig. 31 (f)
Steatoda ephippiata LEVY & AMITAI, 1982: 22, figs. 42-44 (f, S).
Steatoda ephippiata LEVY, 1998: 71, figs. 131-133 (f)
Steatoda ephippiata VAN KEER & BOSMANS, 2010: 22, figs. 1-3 (Dm, misidentification)

Material

Holotype
EGYPT • ♀; not examined.

Material examined
EGYPT • 1♀; Cairo; Jul. 1959; P. Benoit leg.; RMCA 130675.
ISRAEL • 1♀; Ze'elim; 4 Apr. 1967; P. Amitai leg.; HUJ 11694 • 1♀; same data as previous; HUJ 11360 • 1♀; Sinai, Bir Gifgafa; 18 Mar. 1972; N. Primor leg.; HUJ 12700.

Comment

Steatoda ephippiata has been described under three different names. In 1875, THORELL described *Lithyphantes ephippiatus* from Egypt. Then SIMON (1908) described *Lithyphantes ochraceus* from Libya and later on dI CAPORIACCO (1933) described *Teutana argentea* also from Libya and made two drawings of the abdomen, one of the dorsal and one of the ventral side. In 1966 DENIS provided the first drawing of the epigyne. In their revision of the East Mediterrranean *Steatoda* species, LEVY & AMITAI (1982) gave a complete redescription of *S. ephippiata* and provided new drawings of the species, but only for the female since the male was unknown. In the material examined we could recognize two variations in the pattern on the dorsal side of the abdomen. The first variation has two longitudinal rows with four or five pairs of dark spots, the second variation has a completely white abdomen without dark spots (Fig. 22 E).
It was because of this entirely white colouration that VAN KEER & BOSMANS (2010) wrongly described a white male specimen from Tunisia as the unknown male of *S. ephippiata*, since there was no other *Steatoda* species known with such colour and pattern at the time. It is only later, after examining the holotype of *S. triangulosa concolor* and newly collected material from Tunisia and Algeria that it becomes clear the male described by VAN KEER & BOSMANS (2010) belongs to *S. concolor* and is not the unknown male of *S. ephippiata*. The true male of *S. ephippiata* remains unknown. Recently, ZAMANI *et al*. (2016) published new localities of *S. ephippiata* in the northern Iranian province of Khorasan-e Rasavi where males and females were collected together. The authors did not provide a description or figures of the male, therefore *S. ephippiata* remains for the time being the only *Steatoda* species in the Euro-Mediterranean region of which only one sex is known.

Ecology

The specimens collected were found in arid and semi-arid zones under stones. Females were captured in March, April, in Israel also in September (LEVY & AMITAI, 1982) and in Iran also in May, June, July and November (ZAMANI et al., 2016). The Iranian males were collected in April, July and November (ZAMANI et al, 2016).

Distribution

The species is currently known from Algeria, Tunisia, Libya, Egypt, Israel and Iran.

***Steatoda maura* (Simon, 1909)**

(Figs. 23 A-G, 24 A-F)

Material

Holotype
MOROCCO • ♀; Mogador; not examined.

Material examined
ISRAEL • 1♀; Jerusalem; 9 Mar. 1974; P. Amitai leg.; HUJ 12819 • 1♀, 1 juvenile; Ma'ale Adummim; 6 Mar. 1978; G. Levy leg.; HUJ 13125 • 1♂; same data as previous; HUJ 13151 • 1♂; same data as previous; HUJ 13113 • 1♀; Jerusalem; 16 Dec. 1966; P. Amitai leg.; HUJ 13311 • 1♂; Jerusalem, Mount Scopus; 15 Nov. 1944; A Shulov leg.; HUJ 13309 • 1♀; Ma'ale Adummim; 12 Jan. 1968; P. Amitai leg.; HUJ 11507.
GREECE • 3♀♀; Rhodos, Lardos; 18 m a.s.l.; 10 May 2006; J. & K. Van Keer leg.; beating low branches in *Pinus* forest; CJVK 2620 • 2♀♀; Rhodos, Apolakkia; 51 m a.s.l.; 12 May 2006; J. & K. Van Keer leg.; under large stones; CJVK 2628 • 1♀; Rhodos, Archipoli; 196 m a.s.l.; 14 May 2006; J. & K. Van Keer leg.; on olive tree trunk; CJVK 2639.

Comment

It has been suggested that *S. maura* might be a junior synonym of *S. nobilis* (BAUER *et al*. 2019, LEDOUX & RAPHAEL 1998, WIEHLE 1934). However, LEVY & AMITAI (1982) as well as the next paragraph prove it to be definitely a distinct species.

Distribution

Steatoda maura is known from Morocco, Israel, Turkey, Greece and Iran.

***Steatoda nobilis* (Thorell, 1875)**

(Figs. 25 A-G, 26 A-F)

Material

Holotype
PORTUGAL • ♂; Madeira; Schiödte leg.; not examined.

Material examined
SPAIN • 1♂; Girona, Empuriabrava; 2 m a.s.l.; 6 Oct. 1995; K. De Prins leg.; on wall; CJVK 1553 • 1♂, 1♀; Canary Islands, Tenerife, La Esperanza; 943 m a.s.l.; 1 May 2004; J. & K. Van Keer leg.; on tree trunks of *Pinus*; CJVK 2355.
PORTUGAL • 4♀♀; Madeira, Ribeiro Frio; 1139 m a.s.l.; 11 May 2005; J. Van Keer leg.; on old walls; CJVK 2479.

Comment

Steatoda maura and *S. nobilis* are closely related, with a very similar colour and pattern in males and females (Figs. 23 G, 24 E-F, 25 G, 26 E-F). Males differ however by the shape of the embolus, which is slender and distally narrowing in *S. maura*, with a sharp tip not reaching the tip of the cymbium (Fig. 23 A-F), while it is more robust and broad, not narrowing distally and with a somewhat blunt tip reaching the tip of the cymbium in *S. nobilis* (Fig. 25 A-F). Females of both species have an epigynal cavity with a wide median septum that is subtrapezoidal and tongue-shaped in *S. maura* but parallel-sided in *S. nobilis* (Figs. 24 A, C; 26 A, C).

Distribution

Steatoda nobilis is native in Macaronesia, but has been reported now as an introduced species in USA, Colombia, Chile, Europe, Turkey and Iran.

***Steatoda latifasciata* (Simon, 1873)**

(Figs. 27 A-E, 28 A-I, 29 A-E)

Lithyphantes latifasciatus SIMON, 1873: 83, pl. 2, f. 31 (Df).
Lithyphantes moerens THORELL, 1875: 64 (Df). **New syn**.
Lithyphantes latifasciatus DENIS, 1955: 130, f. 31 (f).
Steatoda fuerteventurae SCHMIDT, 1976: 325, f. 7-8 (Df)
Steatoda latifasciata LEVY & AMITAI, 1982: 23, f. 45-52 (Dm, f).
Steatoda latifasciata WUNDERLICH, 1992: 419, f. 604a-b (mf, S of *Steatoda fuerteventurae*).
Steatoda latifasciata LEVY, 1998: 72, f. 134-141 (mf).
Steatoda latifasciata LE PERU, 2011: 465, f. 784 (mf).

Material examined

Holotype
***S.* moerens new syn.** ALGERIA • ♀; Biskra; NRS 113/426; examined.

Other material examined (*S. latifasciata s.s.*)
SPAIN • 2♀♀; Tenerife, Vilaflor, I Fonche; 1050 m a.s.l.; 27 Apr. 2004; J. Van Keer leg.; hand catch under stones along irrigation canal; CJVK 2338 • 1♂; Tenerife, Cruz de Tea, Montañas coloradas; 1299 m a.s.l.; 26 Apr. – 2 May 2004; J.&K. Van Keer leg.; pitfall traps in open maquis; CJVK 2365 • 1♀; Tenerife, Granadila de Abona; 634 m a.s.l.; 26 Apr. – 2 May 2004; J.&K. Van Keer leg.; pitfall traps in open maquis; CJVK 2366.
MOROCCO • 1♂; Tiznit, Jémâa-Ida-Oussemlal; 1285 m a.s.l.; 25 Apr. 2012; J. Van Keer leg.; hand catch under stones in steppe; CJVK 3123 • 1♀; Taroudant, between Aoulouz and Taliouine; 600 m a.s.l.; 4 Feb. 1996; R. Bosmans leg.; hand catch under stones in *Sideroxylon spinosum* steppe; CRB • 1♀; Ouarzazate, Taourirt E, Irmami E; 1480 m a.s.l.; 23 Apr. 2012; J. Van Keer leg.; hand catch under stones in steppe; CJVK 3120 • 1♀; Tiznit, between Massa and Ouled Noumer; 1210 ma.s.l.; 25 Feb. 2017; A. Roujas leg.; hand catch under stones in *Euphorbia* zone; CRB.
ALGERIA • 1♀; El Bayadh, Brezina; 855 m a.s.l.; 5 Mar. 2007; K. De Smet leg.; hand catch under stones in steppe; CRB • 4♀♀; Boumerdes, Zemmouri El Bahri; 25 m a.s.l.; 13 May 1987; R. Bosmans leg.; in dunes; CRB. ISRAEL • 1♀; Eilat; 63 m a.s.l.; 13 Mar. 1995; K. De Smet leg.; hand catch under stones; CRB.

Comment

The overall similarity of the holotype of *Steatoda moerens* (Thorell, 1875) to *Steatoda latifasciata* is immediately clear. The opisthosoma of *S. latifasciata* is black with an anterior white curved belt and two anterior and two lateral white spots, the dorsum has small, inconspicuous white median spots (Fig. 28 E, H). Venter with white interrupted median line and two additional white spots placed obliquely above spinnerets (Fig. 28 F, H). Epigyne (Figs. 28 A-B, 29 A-B) as described in LEVY & AMITAI (1982: 23). Vulva with brown spermathecae with short thick tubes partly visible along median line (Figs. 28 C-D, 29 C-E). Dimensions of specimens from three geographical regions can be found in Table 3.
The white, curved belt at the anterior part of the opisthosoma is missing in the Thorell specimen and the white median spots are much smaller than in other specimens of *S. latifasciata* from Algeria (Fig. 28 G, I). However, the white curved belt is also lacking from the examined specimens from Algeria and Morocco but is present in the material from Tenerife. The ventral median line is narrower and interrupted, in contrast to the Algerian specimens of *S. latifasciata*. The spotting pattern on the dorsal

side of the opisthosoma appears to be quite variable in *S. latifasciata* and Thorell's specimen is a dark variation of this species (Fig. 28 E-I).
The general colour pattern of *S. moerens* does correspond to the specimens of *S. latifasciata* from Algeria, Morocco and Tenerife, but is less pronounced than the latter. The epigyne is identical to specimens of *S. latifasciata* collected in Algeria, Morocco and Tenerife (Figs. 28 A-B, 29 A-B). LEVY & AMITAI (1982) did not study the vulva and therefore had doubts about the status of *S. moerens*. After a thorough comparison of the vulva of *S. moerens* with specimens of *S. latifasciata* from Algeria and Morocco it appears they are identical (Figs. 28 C-D, 29 C-E). There is also a complete overlap in measurements, as shown in Table 4. Therefore, we conclude that *S. moerens* is a junior synonym of *S. latifasciata*.

Table 3: Dimensions (mm) of *S. latifasciata* specimens.

	Specimen origins		
	Algeria (4♀♀)	Morocco (1♀)	Tenerife, Spain (2♀♀)
TL	3.95 – 4.95	3.95	4.10 – 5.00
CL	1.47 – 1.75	1.52	1.45 – 1.67
CW	1.12 – 1.27	1.05	1.10 – 1.30
Fe1 L	1.25 – 1.57	1.12	1.12 – 1.32
Ti1 L	1.00 – 1.20	0.95	0.95 – 1.10
Width of epigyne	0.24 – 0.27	0.23	0.23 – 0.25

Table 4: Comparison of dimensions of females of *S. moerens* and *S. latifasciata.*

	Steatoda moerens (n = 1)	*Steatoda latifasciata* (n = 7)
TL	4.60	3.95 – 5.00
CL	1.65	1.45 – 1.75
CW	1.27	1.05 – 1.30
Fe1 L	1.35	1.12 – 1.57
Ti1 L	1.12	0.95 – 1.20
Width of epigyne	0.27	0.23 – 0.27

Distribution

The only specimen of *S. moerens* was collected in Biskra, Algeria. *Steatoda latifasciata* is known from the Canary Islands, Morocco, Algeria and Israel.

***Steatoda trianguloides* Levy, 1991**
(Figs. 30 A-G, 31 A-F, 46)

Steatoda trianguloides LEVY, 1991: 228, figs. 3-6 (Dm); LEVY, 1998: 62, figs. 112-115 (m); LISSNER, 2016: 6, figs. 4A, 9 (m); BOSMANS *et al*., 2019: 31, 136, fig. 13a-e (Df); ZAMANI *et al*., 2020: 587, fig. 11E-G (m,f); TURKEÇ & BALLI, 2022: 329, fig. 1A-C (f).

Material

Holotype
ISRAEL • ♂; Mt. Hermon; 7 Jul. 1987; G. Levy leg.; HUJ 14130; not examined.

Material examined
CYPRUS • 2♀♀; Lemessos, Mt. Olympos (Chionistra); 1850 m a.s.l.; 26 Apr. 2007, J. Van Keer leg.; hand capture under stones in *Pinus nigra* forest; CJVK 2679.
GREECE • 1♀; Peloponissos, Argolida, Arachneo; 24 May 1998; J. Van Keer leg.; hand catch in litter and under stones in *Quercus* maquis; CJVK 1825 • 1♀; Peloponissos, Ilea, Lambia; 30 May 1998; J. Van Keer leg.; hand catch under stones at border of *Quercus* forest; CJVK 1842.
FRANCE • 2♀♀; Corsica, Haute Corse, between Couvent and Marine de Sisco; 20 May 1995; J.&K. Van Keer leg.; hand catch under stones along road; CJVK 1482. PORTUGAL • 1♂; Bragança, Miranda do Douro; 50 m a.s.l.; 8 May 2017; J. Van Keer leg. Hand catch under stones along river; CJVK 3400.

Diagnosis

Females differ from all its congeners by the epigyne consisting of a membranous trapezoidal plate which has two small anchoring grooves posterolaterally; spermathecae visible through integument, centrally in epigyne (Fig. 31 A, C). A diagnosis of the male can be found in LEVY (1991: 229).

Description

Male
A good description can be found in LEVY (1991: 228). Also see Fig. 30 A-G.

Female
Measurements. (n = 6) TL 3.35 – 5.50; CL 1.25 – 1.70; CW 1.20 – 1.60; Fe I 1.87 – 2.80; Ti I 1.50 – 2.34. Specimen used for description: CJVK 2679.
Prosoma. Carapace almost circular, yellow-brown to brown, surface covered with a few small warty granulations that are more numerous towards the edge. Cephalic bulge smooth, covered with thin forward pointing hairs. Transverse fovea shallow (Fig. 31 E). Clypeus vertical, height three times diameter of AME. Sternum longer than wide, extending between coxae IV, yellow-brown mottled with black, with black border. Labium as long as wide, yellow-brown. Endites sub-rectangular and yellow-brown, with dark anterior serrula (Fig. 31 F). Chelicerae yellow-brown, long and slender, with one anterior tooth. Cheliceral fangs short.
Eyes. Anterior eye row recurved, PER straight from above, lateral eyes touching, anterior eyes equidistant. Anterior lateral eyes, PLE and PME pearly white, AME smaller than the others and dark. All eyes ringed with black.
Opisthosoma. Abdomen oval, slightly longer than wide, dorsally cream with two longitudinal rows of irregular brown spots that sometimes form a serrated band. Lateral sides of abdomen cream with brown blotches. Venter beige with a central white spot between epigastric furrow and spinnerets, flanked by two black spots (Fig. 31 F). Spinnerets ringed with black.
Legs. Yellow-brown, slender, without annulations. Femora IV ve with a few warts. Leg formula 1423.
Epigyne. Posterior width 0.39 – 0.68. Membranous trapezoidal plate with two small anchoring grooves posterolaterally. Spermathecae visible through integument in central zone (Fig. 31 A, C).
Vulva. Spermathecae yellow-brown, globular, separated by median CD running in anterior direction, ending in an arch anteriorly (Fig. 31 B, D).

Remark

The epigynes of *S. trianguloides* and *S. ifricola* are very different, while their vulvae are remarkably similar.

Ecology

Specimens have been collected under rocks and stones, both at low (50 m a.s.l.) and high (1850 m a.s.l.) altitudes. Females were collected in April and May, the male in May (the holotype in July).

Distribution

Previously known from France (Corsica), Cyprus, Israel and Iran. The new records from Portugal and Greece presented here enlarge the known distribution area of the species (Fig. 46).

***Steatoda venator* (Audouin, 1826) nomen dubium**
(Fig. 32 A-F)

Latrodectus venator AUDOUIN, 1826: 138, Pl 3, fig. 11 (f)
Lithyphantes venator SIMON, 1881: 171
Lithyphantes venator CAPORIACCO, 1934: 13
Steatoda venator LEVY & AMITAI, 1982: 19 (removed from synonymy of *S. paykulliana*)

Material

Holotype
EGYPT • ♀; Alexandria; not examined, most probably lost.

Material examined
EGYPT • 2♀♀, 4 juveniles; Alexandria; MNHN AR3478.

Comments

Steatoda venator was described by AUDOUIN (1826: 138) as *Latrodectus venator*. His description is very brief and does not allow identification, neither does his small illustration of the habitus (AUDOUIN 1826: Pl 3, fig. 11). SIMON (1881: 171) transferred the species to *Lithyphantes*, a junior synonym of *Steatoda* and LEVY & AMITAI (1982: 19) removed *Latrodectus venator* from synonymy with *Steatoda paykulliana* (PLATNICK 1989: 202). By courtesy of Elise-Anne Leguin, we were able to examine, through photographs, specimens from the Simon collection (nr. 2899), labelled as "Syria Alex." identified by Simon as *Lithyphantes venator* (MNHN, AR3478). These specimens appeared to belong to *Steatoda paykulliana*. Di CAPORIACCO (1934: 13) also mentioned *Lithyphantes venator* from Lybia but we could not verify these identifications. Since no type material of *Steatoda venator* is known and no specimens are represented in any Egyptian collection (EL-HENNAWY 2021, pers. comm.) we consider *Steatoda venator* as a *nomen dubium*.

Material examined for comparative study

***Steatoda bipunctata* (Linnaeus, 1758)**
(Fig. 33 A-H)

Material examined

BELGIUM • 2♂♂, 3♀♀; Province Vlaams Brabant, Kapelle-op-den-Bos; 12 m a.s.l.; 21 Mar. 1986; K. Van Keer leg.; under roof of old shed; CJVK 659.
FRANCE • 1♀; Var, Collobrières, Vallon de la Verne; 158 m a.s.l.; 27 Dec. 2019; Ph. Ponel leg.; in litter of *Quercus ilex*; CPO.

***Steatoda castanea* (Clerck, 1757)**
(Figs. 34 A-G, 35 A-F)

Material examined

LITUANIA • 2♀♀; Kretinga district, 50 km northeast of Klaipeda, Narsenai; 130 m a.s.l.; 16 Jul. 2006; M. Alderweireldt leg.; in forest; CMA 1434.

CZECHIA • 2♀♀; Svitavy District, Jaromerice; 364 m a.s.l.; Jul.; F. Miller leg.; NMP P6A 769/2 • 1♂, 2♀♀; Zdar Nad Sazavov District, Osová Bityska; 522 m a.s.l.; F. Miller leg.; NMP P6A 769/4 • 1♂; Prague, Budejovicka 60; 279 m a.s.l.; Jul.; K. Voparil leg.; Coll. A. Kurka; NMP P6A 4685.

***Steatoda dahli* (Nosek, 1905)**

(Figs. 36 A-G, 37 A-F)

Material examined

Holotype
TURKEY • ♂; Asia Minor, Kargyn; May 1902; A. Penther leg.; NMW 530; examined.

Other material examined
ISRAEL • 1♂; Golan Heights, Boqa'ata Forest; 1075 m a.s.l.; 24 Jun. 1973 (2218/2910); G. Levy leg.; HUJ 13323 • 1♀; same data as previous; HUJ 13321 • 1♀; Golan Heights, Boqa'ata Forest; 1075 m a.s.l.; 1 Jul. 1973 (2218/2910); G. Levy leg.; HUJ 13326.

***Steatoda erigoniformis* (O. Pickard-Cambridge, 1872)**

(Fig. 38 A-H)

Material examined

SAUDI-ARABIA • 12♂♂, 5♀♀; Hada Al-Sham Valley, 125 km northeast of Jeddah; 217 m a.s.l.; 15 May 1999; A. Faragalla leg.; under stones; CMA 1268.
GREECE • 1♂; Kos, Marmari; 3 m a.s.l.; 4 Sep. 2019; I. Appels leg.; on wall in Grecotel; CJVK 3474.

***Steatoda grosssa* (C.L. Koch, 1838)**

(Fig. 39 A-H)

Material examined

BELGIUM • 2♂♂, 1♀; Province Antwerpen, Antwerpen city, Kelderstraat; 10 m a.s.l.; 5 Nov. 2004; K. Van Keer leg.; on walls in building; CJVK 2406 • 1♀; Province Antwerpen, Antwerpen city, Kiel; 6 m a.s.l.; 2 Sep. 2008; K. Van Keer leg; under old car; CJVK 2865.
SPAIN • 2♂♂, 2♀♀; Girona, Empuriabrava; 2 m a.s.l.; 26 Jun. 1995; J. Van Keer leg.; on walls and under stones; CJVK 1524.
FRANCE • 1♂; Var, Pourcieux; 358 m a.s.l.; 5 Jun. 2017; Ph. Ponel leg.; under stone in garden; CPO • 1♀; Bouches-du-Rhône, Marseille, Île du Planier; 1 m a.s.l.; 31 May 2017; Ph. Ponel leg.; walking on stones; CPO.

***Steatoda ifricola* (Lecigne, Lips, Moutaouakil & Oger, 2020)**

(Figs. 40 A-G, 41 A-E)

Material examined

MOROCCO • 1♂; Souss-Massa, Agadir Ida-Outanane, Taghazout, Tizgui, Ifri N' Telmate Cave; 630 m a.s.l.; 27 Oct. 2019; S. Moutouakil leg.; hand collecting between boulders in cave; CPO • 1♀; Souss-Massa, Agadir Ida-Outanane, Taghazout, Paradise Valley, Ifri Taghrat Wankrim Cave; 380 m a.s.l.; 4 Nov. 2019; J. Lips leg.; hand collecting between boulders in cave; CPO.

***Steatoda paykulliana* (Walckenaer, 1806)**
(Fig. 42 A-H)

Material examined

TUNISIA • 2♂♂, 2♀♀; Gov. Kasserine, Thélépte; 793 m a.s.l.; 1 Mar. 2005; J. Van Keer leg.; under stones in ruins; CJVK 2435.

***Steatoda triangulosa* (Walckenaer, 1802)**
(Fig. 43 A-H)

Material examined

GREECE • 1♂, 1♀; Lesbos, Vatera, Camping Dionysos; 8 m a.s.l.; 22-25 May 1994; A. Noordam leg.; in toilet building on walls; CJVK.
BELGIUM • 2♂♂, 3♀♀; Province Antwerpen, Duffel; 4 m a.s.l.; 26 Jun. 1990; in railroad station on walls; J. Van Keer leg.; CJVK 1124.

Key

Males
(males of *S. ephippiata* and *S. xerophila* are unknown)

1. Embolus with a flattened basal part and a pointed, straight or S-shaped terminal part. MA a thick, sausage-shaped, semicircular sclerite circling ventral and prolateral side of tegulum. TTA sclerotised, with a blunt, curved or hooked tip (Fig. 1 A, B). 2
- Embolus with a thick, solid basal part and a thin, heavily sclerotised pointed terminal part making a semicircular bend around ventral or distal part of bulbus (Fig. 1 C). 11
2. Embolus with broad, flat basal part and a straight or slightly curved tip. TTA rather plump, with a terminal hook (Fig. 1 A) 3
- Embolus with a ribbon-shaped flattened basal part and a tip which is S-shaped in pl and ve view. TTA gradually narrowing, bluntly pointed (Fig. 1 B) 8
3. Flat basal part of E with a simple, curved outline and a basal hook in rl view, terminal part thin from base to tip, sharply pointed (Figs. 7 D, 20 D) 4
- Flat basal part of E with a bumpy, subquadratic outline, tip broad at the base, with pointed end (Figs. 4 B, 34 B)..... 5
4. Terminal part of TTA bent under a right angle in pl view, end of TTA bifid, with one sharp and one blunt tip. Thin, needle-like terminal section of embolus almost straight in ve view. Abdomen mostly dark brown, with a white longitudinal central herringbone pattern (Fig. 7 B, C, I)..... ..... *S. ingeae* sp. nov.
- Terminal part of TTA pointing in anterior direction in pl view, end of TTA bifid, with two sharp tips. Thin, needle-like terminal section of embolus clearly curved in pl direction in ve view. Abdomen cream, with two parallel rows of dark brown spots in a longitudinal row parallel to midline of abdomen (Fig. 20 A-C, H)..... *S. concolor*
5. TTA almost straight, broad, and parallel-sided in ve view, with blunt terminal hook. Abdomen with a dark grey folium and some black marks (Fig. 34 B, G).....*S. castanea*
- TTA curved in ve view, abdomen with a median row of large, lozenge-shaped or triangular white marks on a black background (Figs. 3 B, 9 G) 6
6. Median row of white marks on abdomen contiguous, patches broadly connected, sometimes dorsal side of abdomen mostly white. Embolar tip with a broad base in rl view, but thin and curved upwards in ve view (Fig. 43 B-C, F) .....*S. triangulosa*
- Median white marks on abdomen isolated or thinly connected, tip of E straight in ve view (Figs. 3 B, H; 9 B, G)..... 7

7. TTA gradually narrowing in ve view, with a sharply pointed terminal hook in pl view (Figs. 3 A-B, 4 A-B) ..... *S. dickjonesi* sp. nov.
- TTA broad and parallel-sided in ve view, with a wide, blunt end and a small, blunt terminal hook (Fig. 9 A-B)..... *S. koeni* sp. nov.
8. Basal, flattened part of E wide, more than ¼ of height of bulbus in rl view. Terminal part of E flattened, S-shaped (Fig. 25 C)..... 9
- Basal, flattened part of E not so wide, less than ¼ of height of bulbus. Terminal part of E thin, solid and sickle-shaped (Fig. 39 B)..... 10
9. Dorsal side of abdomen with large white central folium. Palp in rl view with MA mostly hidden behind tegulum and a terminal part of E that is clearly S-shaped (Fig. 25 A-C, G) ..... *S. nobilis*
- Dorsal side of abdomen with central median line of isolated white triangles. Palp in rl view with MA mostly visible and terminal part of E sickle-shaped (Fig. 39 A-C, F) ..... *S. grossa*
10. Dorsal side of abdomen mostly white, with ring of black segments close to margin. Palp in ve view with tapering, S-shaped and sharply pointed terminal part of E and a lanceolate, semitransparent C with a blunt tip (Fig. 23 A-C, G)..... *S. maura*
- Dorsal side of abdomen mostly black, with a central line of interconnected triangles. Palp in ve view with thin, sickle-shaped sharply pointed terminal part of E and a large broadly oval semitransparent C (Fig. 42 B, F)..... *S. paykulliana*
11. TTA very large and broad, semicircular in pl view. Dorsal side of abdomen dark with a median line of interconnected white oval patches (Fig. 33 A-C, F)..... *S. bipunctata*
- TTA straight or hooked, but not semicircular (Figs. 11 B, 40 A) 12
12. Terminal part of E thin, slightly curved, pointing in apical direction (Fig. 30 A-C) 13
- Terminal part of E thin, making a circular bend across apical end of tegulum and then pointing in apical direction (Fig. 27 B-C) 16
13. TTA S-shaped in ve view, with blunt terminal hook (Figs. 11 B, 30 B)..... 14
- TTA straight in ve view, with pointed or bifid tip (Figs. 16 B-C, 40 B) 15
14. TTA slender and pointed in pl view, terminal part of E slightly curved in rl view (Fig. 30 A, C) .... *S. trianguloides*
- TTA broad and blunt-ended in pl view, terminal part of E semicircular in ve view (Fig. 11 A-B).... ..... *S. verae* sp. nov.
15. TTA thick, dark, heavily sclerotised and with a sharp, curved point (Fig. 16 A-C, K-L) .... *S. albomaculata*
- TTA broad, semitransparent, with bifid tip (Fig. 36 A-B)..... *S. dahli*
16. TTA broad at base, sinuous, tapering to a sharp tip. Terminal part of E thin and semicircular in rl view (Figs15 B-C, 40 A-C) 17
- TTA straight or sickle-shaped. Terminal part of E straight or solenoidal in rl view (Figs. 27 A-C, 38 A-C) 18
17. Bend of E in lower half of bulbus (Fig. 15 B-C) ..... *S. albocincta*
- Bend of E in apical half of bulbus (Fig. 40 B-C) ..... *S. ifricola*
18. Terminal part of E straight and pointing in apical direction in rl view. TTA with a sharp terminal hook. C leaf-shaped (Fig. 27 A-C)..... *S. latifasciata*
- Terminal part of E confined to upper fourth of bulbus, solenoidal. TTA straight and sharply pointed. C semitransparent and with a subterminal lateral lobe. Dorsal side of abdomen black with four lateral spots and one terminal white spot (Fig. 38 A-C, F) ..... *S. erigoniformis*

Females

1. Atrium of epigyne with a tongue-shaped septum running in posterior direction (Fig. 2 B) 2
- Epigyne without pronounced atrium, with an atrium without septum or with an atrial septum running in anterior direction (Figs. 2 A, 22 A, C) 8
2. Atrial septum wide, parallel-sided, not reaching posterior rim of atrium (Fig. 26 A, C) .... *S. nobilis*
- Atrial septum narrow, or if wide, subtrapezoidal or subtriangular (Figs. 15 D, 24 A, 33 D) 3

3. Atrial septum narrow, reaching posterior rim of atrium (Fig. 39 D) 4
- Atrial septum wide (Fig. 24 A) 6
4. Atrial septum parallel-sided, semitransparent (Fig. 38 D)..... *S. erigoniformis*
- Atrial septum teardrop-shaped, widening posteriorly (Figs. 33 D, 39 D)..... 5
5. Anterior rim of atrium semicircular (Fig 39 D)..... *S. grossa*
- Anterior rim of atrium consisting of two bows separated by a blunt indentation (Fig. 33 D) ..... *S. bipunctata*
6. Atrial septum subtriangular, pointed (Fig. 15 D) ..... *S. albocincta*
- Atrial septum subtrapezoidal (Figs. 17 E, 24 A)..... 7
7. Atrial septum not reaching posterior rim of atrium (Fig. 24 A, C)..... *S. maura*
- Posterior part of atrial septum hidden beneath thickened, inflated posterior rim of atrium (Figs. 17 A, C, E, G) ..... *S. albomaculata*
8. No clear epigynal atrium (Figs. 5 A, 8 A)..... 9
- Epigynal atrium present (Figs. 10 A, 41 A)..... 15
9. No central atrium, but a posterior, single, elongated transversal CO present in epigyne (Figs. 5 A, 21 A, C)..... 10
- Central opaque region present in epigyne (Figs. 29 A-B, 31 A, C)..... 13
10. Elongated transversal CO anteriorly indentated (Fig. 43 D)..... *S. triangulosa*
- Elongated anterior transversal CO not anteriorly indentated (Figs. 5 A, 21 A)..... 11
11. Posterior elongated transversal CO sausage-shaped, with thick, dark anterior rim (Figs. 5 A, 6 A) ..... *S. dickjonesi* sp. nov.
- Posterior transversal CO subtriangular, surrounded by brown sclerotised rim. ST with pitted surface and anterior, curved CD (Figs. 8 A, 21 A) 12
12. Width of subtriangular CO cavity smaller than 0.15 mm, not as wide as distance between exterior edges of ST. Height of CO cavity equal to distance between CO cavity and anterior dark sclerotised plate. ST poorly visible through integument. Abdomen mostly dark brown, with a white longitudinal central herringbone pattern (Fig. 8 A-E) ..... *S. ingeae* sp. nov.
- Width of subtriangular CO larger than 0.15 mm, as wide as distance between exterior edges of ST. Height of CO cavity larger than distance between CO cavity and anterior dark sclerotised plate. ST for most part clearly visible through integument. Abdomen cream, with two parallel rows of dark brown spots in a longitudinal row parallel to midline of abdomen (Fig. 21 A-E)..... ..... *S. concolor*
13. Central opaque region of epigyne subtrapezoidal, semitransparent (Fig. 31 A, C) .... *S. trianguloides*
- Central opaque region of epigyne transversely sausage-shaped (Figs. 29 A-B, 37 A) 14
14. Vulva simple, with two oval ST and inconspicuous CD (Fig. 29 C-E)..... *S. latifasciata*
- Vulva with curved CD running in posterior direction (Fig. 37 B) ..... *S. dahli*
15. Atrium deep, wide, subrectangular, vulva with CD first running in median and then in posterior direction (Fig. 41 A-B) 16
- Atrium not subrectangular (Figs. 13 A, 35 A) 17
16. Vulva with ST close together, CD anterior, curved (Fig. 41 B, D)..... *S. ifricola*
- Vulva with ST widely separated, curved CD in between (Levy & Amitai 1982, fig. 54)..... ..... *S. xerophila*
17. Epigynal atrium transversely sausage-shaped, with posterior septum running in anterior direction (Figs. 22 A, C, 42 D)..... 18
- Epigynal atrium without septum (Figs. 13 A, 35 A) 19
18. Septum wide, long and tongue-shaped, dorsal side of abdomen mostly white (Fig. 22 A, C, E).... ..... *S. ephippiata*
- Septum short, blunt and subtriangular, dorsal side of abdomen mostly black, with pronounced anterior white, yellow or red crescent (Fig. 42 D, G) ..... *S. paykulliana*
19. Atrium rather narrow, transversely oval, with dark, heavily sclerotised posterior rim. Vulva simple, oval ST with pitted surface, CD inconspicuous (Fig.10 A-D) ..... *S. koeni*

- Atrium semicircular to subtriangular, vulva with widely separated globular ST and anterior, curved CD (Figs. 13 A-B, 35 A-B) 20
20. Atrium semicircular with wide, bifid posterior rim. ST with strongly pitted surface. Dorsal side of abdomen with dark grey folium (Fig. 35 A-E) ..... *S. castanea*
- Atrium inversely subtriangular, dorsal side of abdomen with extensive white pattern on a dark background (Fig. 13 A, C, E) ..... *S. verae*

Discussion

Although the genus is somatically rather homogeneous, differences in genitalic structure suggest three distinct groups (Figs. 1 A-C, 2 A-F).

The castanea group

This group encompasses *S. castanea* (Figs. 34, 35), *S. dickjonesi* sp. nov. (Figs. 3-6), *S. concolor* (Figs. 19-21), *S. ingeae* sp. nov. (Figs. 7, 8), *S. koeni* sp. nov. (Figs. 9, 10) and *S. triangulosa* (Fig. 43).

Embolus (E) consisting of a broad, flat basal part and a dark, sclerotised, thin spike which is either straight or slightly curved in ventral view. Conductor (C) pale, semitransparent, with a rather narrow base and a broad, blunt, leaf-like terminal part. Median apophysis (MA) a thick, sausage-shaped, semicircular sclerite circling the ventral and prolateral side of the tegulum. It is invaginated by the sperm duct. Theridiid tegular apophysis (TTA) sclerotised, broad and parallel sided, with a terminal hook (Fig. 1 A). Epigyne with a thick, sclerotised posterior rim that may have openings (*S. concolor*, S. *dickjonesi* sp. nov., *S. ingeae* sp. nov., *S. triangulosa*). Vulva with two globular spermathecae (ST) with a pitted surface and short to medium length, straight copulatory ducts (CD) running in lateral or posterior (*S. concolor*, *S. ingeae* sp. nov., *S. koeni* sp. nov.) direction (Fig. 2 A, D).

Female abdomen dorsally with a central light line consisting of consecutive wide triangles.

The nobilis group

A group consisting of *S. nobilis* (Figs. 25, 26), *S. grossa* (Fig. 39), *S. maura* (Figs. 23, 24), *S. paykulliana* (Fig. 42) and *S. xerophila* (LEVY & AMITAI 1982: 24-25, figs. 53, 54).

Embolus S-shaped, with a thick, ribbon-shaped basal section and a pointed narrow (*S. maura*, *S. paykulliana*) or flattened (*S. grossa*, *S. nobilis*) terminal part. Conductor pale, semitransparent, constricted at the base and with a lanceolate or subtrianglar blunt terminal part. Median apophysis (MA) a sausage-shaped, semicircular sclerite circling the ventral and prolateral side of the tegulum. It is invaginated by the sperm duct. Theridiid tegular apophysis phallus-shaped, sclerotised, with a broad base and a narrower, slightly curved and blunt distal section (Fig. 1 B).

Epigyne with a sclerotised posterior rim and an anterior rim with a broad, posteriorly directed tongue partly dividing the atrium (short and bifid in *S. paykulliana*). Vulva with two globular spermathecae with a pitted surface and medium length CD running in posterior direction (Fig. 2 B, E).

Female abdomen dorsally with a conspicuous semicircular, arched anterior mark, sometimes followed by a thin longitudinal central line.

The albomaculata group

Constituted of *S. albomaculata* (Figs. 16-18), *S. albocincta* (Fig. 15), *S. bipunctata* (Fig. 33), *S. dahli* (Figs. 36, 37), *S. ephippiata* (Fig. 22), *S. erigoniformis* (Fig. 38), *S. ifricola* (Figs. 40, 41), *S. latifasciata* (Figs. 27-29), *S. trianguloides* (Figs. 30, 31) and *S. verae* sp. nov. (Figs. 11-14).

Embolus with a rather wide base, but soon narrowing into a long, dark, thin, heavily sclerotised terminal part making a semicircular bend along the ventral side of the bulbus, first in basal, then in apical direction. Conductor partly sclerotised, not transparent, basally constricted and with a subtriangular or bifid (*S. dahli,* S. *erigoniformis*) terminal part. Visible part of MA partly or totally restricted to pl part of bulbus. It is invaginated by the sperm duct. Theridiid tegular apophysis variable in shape, in most species sharply pointed and lanceolate, straight or with a curved tip (*S. albocincta*, *S.*

albomaculata, *S. erigoniformis*, *S. ifricola*, *S. latifasciata*, *S. trianguloides*), but broad and bifid with one curved, pointed tip in *S. dahli*, or with a very broad semicircular base in *S. bipunctata* or narrow and with a blunt, curved tip as in *S. verae* (Fig. 11 B).
Epigyne with a generally large anterior atrium and a thick, sclerotised posterior rim (semitransparent in *S. trianguloides*). Vulva with long curved CD (short in *S. ephippiata*) first running in posterior direction and then, posteriorly, in lateral direction, entering the globular ST (Fig. 2 C, F).
Female abdomen dorsally with conspicuous lateral white spots.

Acknowledgments

The authors are thankful to Christoph Hörweg, (NHMW), Holger Frick (NMB), Tobias Malm (NHRS), Julia Stigenberg (NHRS) and Maria Tavano (MCSNG) for the loan of *Steatoda* type material. Special thanks go to Dmitri Logunov who allowed to study the collection of the late Dick Jones and gave permission to publish some of the drawings Jones made of two of the new species. Efrat Gavish-Regev (HUJ) and Petr Dolejs (NMP) are thanked for providing comparative material from their institutions. We express sincere gratitude to our collegues Mark Alderweireldt (UGent), Robert Bosmans (UGent), Rudy Jocqué (RMCA), Arnaud Henrard (RMCA), Ghassen Kmira (Univ. Tunis) and Sylvain Lecigne (Fressies) who kindly gave access to their collections for study. Elise-Anne Leguin (MNHN) kindly provided images of *Steatoda venator* from the Simon collection. Rudy Jocqué is thanked for skilfully making stacking images of a *Steatoda ephippiata* female from the MRAC collection. We are grateful to Danni Sherwood (NHM) for sparing no effort in trying to locate the holotype of *Steatoda distincta* in NHM and OUM. The useful advice of Francisco Welter-Schultes, Tony Rees and Stephen Thorpe on the correct nomenclature of *S. concolor* is gratefully acknowledged. We are also grateful to Hisham El-Hennawy, Youssef Alioua and Ourida Kherbouche who gave interesting additional information on some North African *Steatoda* species. Koen Van Keer is thanked for preparing the distribution maps.
Thanks are also due to three anonymous reviewers for helpful comments significantly improving the text.

References

AGNARSSON, I. 2004. Morphological phylogeny of cobweb spiders and their relatives (Araneae, Araneoidea, Theridiidae). *Zoological Journal of the Linnean Society* **141(4)**: 447-626. doi:10.1111/j.1096-3642.2004.00120.x

AGNARSSON, I., CODDINGTON, J. A. & KNOFLACH, B. 2007. Morphology and evolution of cobweb spider male genitalia (Araneae, Theridiidae). *Journal of Arachnology* **35**: 334-395. doi:10.1636/SH-06-36.1

ALMQUIST, S. 2005. Swedish Araneae, part 1 – families Atypidae to Hahniidae (Linyphiidae excluded). *Insect Systematics & Evolution, Supplement* **62**: 1-284.

AUDOUIN, V. 1826. Explication sommaire des planches d'arachnides de l'Égypte et de la Syrie. In: Savigny, M. J. C. L. de: "Description de l'Égypte, ou recueil des observations et des recherches qui ont été faites en Égypte pendant l'expédition de l'armée française, publié par les ordres de sa Majesté l'Empereur Napoléon le Grand.". *Histoire Naturelle* **1(4)**: 1-339 (arachnids, pp. 99-186, pl. 1-7).

AZHEGANOVA, N. S. 1968. *Kratkii opredelitel' paukov (Aranei) lesnoi i lesostepnoi zony SSSR*. Akademia Nauk SSSR, 149 pp.

BAUER, T., FELDMEIER, S., KREHENWINKEL, H., WIECZORREK, C., REISER, N. & BREITLING, R. 2019. *Steatoda nobilis*, a false widow on the rise: a synthesis of past and current distribution trends. *Neobiota* **42**: 19-43. doi:10.3897/neobiota.42.31582

BECKER, L. 1896. Les arachnides de Belgique, deuxième et troisième parties. *Annales du Musée Royal d'Histoire Naturelle de Belgique* **12**(2): 1-127, pl. 1-25 & **12**(3): 1-378, pl. 1-18. doi:10.5962/bhl.title.48721

BLACKWALL, J. 1859. Descriptions of newly discovered spiders captured by James Yate Johnson Esq., in the island of Madeira. *Annals and Magazine of Natural History* (3) **4**(22): 255-267. doi:10.1080/00222935908697122

BÖSENBERG, W. 1902. Die Spinnen Deutschlands. II-IV. *Zoologica* (Stuttgart) **14**(2-4): 97-384, pl. 9-36. doi:10.5962/bhl.title.6508

BOSMANS, R. & VAN KEER, J. 2012. A review and new records of the comb-footed spiders in North Africa (Araneae: Theridiidae). *Serket* **13**: 128-168.

BOSMANS R., VAN KEER, J., RUSSELL-SMITH, A., HADJICONSTANTIS, M., KOMNENOV, M., BOSSELAERS, J., HUBER, S., MCCOWAN, D., SNAZELL, R., DECAE, A., ZOUMIDES, C., KIELHORN, K.-H. & OGER, P. 2019. Spiders of Cyprus (Araneae). A catalogue of all currently known species from Cyprus. *Newsletter of the Belgian arachnological Society* **34(Supplement)**: 1-173.

CAPORIACCO, L. DI 1933. Araneidi. In: Spedizione scientifica all'oasi di Cufra (Marzo-Luglio 1931). *Annali del Museo Civico di Storia Naturale di Genova* **56**: 311-340.

CAPORIACCO, L. DI 1934. Missione zoologica del Dott. E. Festa in Cirenaica. Aracnidi. *Bollettino dei Musei di Zoologia ed Anatomia Comparata della Reale Università di Torino* **44**: 121-146.

CHYZER, C. & KULCZYŃSKI, W. 1894. *Araneae Hungariae. Tomus II*. Academia Scientarum Hungaricae, Budapest, pp. 1-151, Pl. I-V.

CODDINGTON, J. A. 1990. Ontogeny and homology in the male palpus of orb-weaving spiders and their relatives, with comments on phylogeny (Araneoclada: Araneoidea, Deinopoidea). *Smithsonian Contributions to Zoology* **496**: 1-52.

DE GEER, C. 1778. *Des araignées*. In: *Mémoires pour servir à l'histoire des insectes. Tome septième*. Pierre Hesselberg, Stockholm, 176-324, pl. 11-19, 38-39.

DENIS, J. 1957. Zoologisch-systematische Ergebnisse der Studienreise von H. Janetschek und W. Steiner in die spanische Sierra Nevada 1954. VII. Araneae. *Sitzungsberichte der Österreichischen Akademie der Wissenschaften* (I) **166**: 265-302.

DENIS, J. 1966. Les araignées du Fezzân. *Bulletin de la Société d'Histoire Naturelle d'Afrique du Nord* **55**: 103-144.

EMERTON, J. H. 1902. *The common spiders of the United States*. Boston, 225 pp. doi:10.5962/bhl.title.5617

FAÚNDEZ, E. I. & CARVAJAL, M. A. 2016. The spider genus *Steatoda* Sundevall, 1833 (Araneae: Theridiidae) in the State of North Dakota (USA). *Revista Ibérica de Aracnología* **29**: 83-85.

FEDOTOV, D. 1912. Materialy k faounié paukow Twerskoï gouberny. *Berichte der Biologischen Süßwasserstation der Kaiserlichen Naturforschergesellschaft zu St. Petersburg* **3**: 53-134.

GAYMARD, M. & LECIGNE, S. 2018. Contribution à la connaissance de l'aranéofaune (Araneae) du Gard et en particulier du massif des Gorges du Gardon (Occitanie, France). *Bulletin de l'Association Française d'Arachnologie* **1**: 1-39.

HAHN, C. W. 1833. *Die Arachniden*. C. H. Zeh'sche Buchhandlung, Nürnberg, Erster Band, pp. 77-129, pl. 19-36 (f. 57-95); Zweiter Band, pp. 1-16, pl. 37-47 (f. 96-105). doi:10.5962/bhl.title.43744

HAHN, C. W. 1836. *Monographie der Spinnen*. Lechner, Nürnberg, Heft 8, 1 p., 4 pls. doi:10.5962/bhl.title.122225

HANSEN, H. J. 1882. Spindeldyr. In: Schiödte, J. C. (ed.) Zoologia Danica. Kjöbenhavn 3, 1-81, I-V.

HU, J. L. 1984. *The Chinese spiders collected from the fields and the forests*. Tianjin Science and Technology Press, 482 pp.

HU, J. L. 2001. *Spiders in Qinghai-Tibet Plateau of China*. Henan Science and Technology Publishing House, 658 pp.

KASTON, B. J. 1948. Spiders of Connecticut. *Bulletin of the Connecticut State Geological and Natural History Survey* **70**: 1-874.

KAYA, R. S. & UĞURTAŞ, İ. H. 2011. The cobweb spiders (Araneae, Theridiidae) of Uludağ Mountain, Bursa. *Serket* **12**: 144-153.

KEYSERLING, E. 1884. *Die Spinnen Amerikas II. Theridiidae*. Bauer & Raspe, Nürnberg 1, 1-222. doi:10.5962/bhl.title.64832

KIM, S. T. 2021. Spiders V. Arthropoda: Arachnida: Araneae: Theridiidae, Amaurobiidae, Eresidae, Zoropsidae, Anyphaenidae. *Invertebrate Fauna of Korea* **21**(47): 1-230.

KNOFLACH, B. 1996. *Steatoda incomposita* (Denis) from southern Europe, a close relative of *Steatoda albomaculata* (Degeer) (Araneae: Theridiidae). *Bulletin of the British Arachnological Society* **10**: 141-145.

KNOFLACH, B. & PFALLER, K. 2004. Kugelspinnen – eine Einführung (Araneae, Theridiidae). In: Thaler, K. (ed.) Diversität und Biologie von Webspinnen, Skorpionen und anderen Spinnentieren. *Denisia* **12**: 111-160.

KOCH, C. L. 1837. *Übersicht des Arachnidensystems.* Heft 1. C. H. Zeh'sche Buchhandlung, Nürnberg, 39 pp., pl. 1-6. doi:10.5962/bhl.title.39561

KOCH, C. L. 1839. *Die Arachniden*. C. H. Zeh'sche Buchhandlung, Nürnberg, Fünfter Band, pp. 125-158, pl. 175-180 (f. 418-431); Sechster Band, pp. 1-156, pl. 181-216 (f. 432-540); Siebenter Band, pp. 1-106, pl. 217-246 (f. 541-584). doi:10.5962/bhl.title.43744

KOCH, C. L. 1840. Crustacea, Myriapoda et Arachnides. In: Fürnrohr, A. E. (ed.) Naturhistorische Topographie von Regensburg, Dritter Band., pp. 387-458.

LE PERU, B. 2011. The spiders of Europe, a synthesis of data: Volume 1 Atypidae to Theridiidae. *Mémoires de la Société Linnéenne de Lyon* **2**: 1-522.

LECIGNE, S., LIPS, J., MOUTAOUAKIL, S. & OGER, P. 2020. Two new cave-dwelling spider species from the Moroccan High Atlas (Araneae: Liocranidae, Theridiidae). *Arachnologische Mitteilungen* **60**: 12-18. doi:10.30963/aramit6002

LEDOUX, J.C. & EMERIT, M. 2010. Araignées de la réserve naturelle de Jujols : deuxième inventaire, 2008-2009 (Pyrénées Orientales). Office national de la Chasse et de la Faune sauvage & Fédération des Réserves naturelles catalans, pp. 1-37.

LEDOUX, J.C. & RAPHAEL, B. 1998. Araignées de la Réserve naturelle du Mas Larrieu (Argélès, Pyrénées-Orientales). *Office Pour les Insectes et Leur Environnement du Languedoc-Roussillon, Perpignan*: 1-16.

LEDOUX, J.C. & RAPHAËL, B. 1999. Araignées de la réserve naturelle du Mas Larrieu (Argelès, Pyrénées Orientales). Office pour l'information Eco-Entomologique du Languedoc-Rousillon, pp. 1-16.

LEDOUX, J.C., RAPHAEL, B. & EMERIT, M. 2004. Araignées de la réserve naturelle de Jujols (Pyrénées Orientales). Office pour l'information Eco-Entomologique du Languedoc-Roussillon, pp.1-21.

LEVI, H. W. 1957. The spider genera *Crustulina* and *Steatoda* in North America, Central America, and the West Indies (Araneae, Theridiidae). *Bulletin of the Museum of Comparative Zoology* **117**: 367-424.

LEVI, H. W. & LEVI, L. R. 1962. The genera of the spider family Theridiidae. *Bulletin of the Museum of Comparative Zoology* **127**: 1-71.

LEVY, G. 1991. On some new and uncommon spiders from Israel (Araneae). *Bulletin of the British Arachnological Society* **8**(7): 227-232.

LEVY, G. 1998. Araneae: Theridiidae. In: Fauna Palaestina, Arachnida III. Israel Academy of Sciences and Humanities Jerusalem, 228 pp.

LEVY, G. & AMITAI, P. 1982. The cobweb spider genus *Steatoda* (Araneae, Theridiidae) of Israel and Sinai. *Zoologica Scripta* **11(1)**: 13-30. doi:10.1111/j.1463-6409.1982.tb00515.x

LISSNER, J. 2016. A small study of the Corsican spider and pseudoscorpion fauna (Araneae, Pseudoscorpiones). *Nieuwsbrief SPINED* **36**: 5-15.

LOCKET, G. H. & MILLIDGE, A. F. 1953. *British spiders. Vol. II*. Ray Society, London, 449 pp.

LUCAS, H. 1846. Histoire naturelle des animaux articulés. In: Exploration scientifique de l'Algérie pendant les années 1840, 1841, 1842 publiée par ordre du Gouvernement et avec le concours d'une commission académique. Paris, Sciences physiques, Zoologie 1, 89-271, pl. 1-17. doi:10.5962/bhl.title.112444

MARTINI, F. H. W. & GOEZE, J. A. E. 1778. (ed.) D. Martin Listers Naturgeschichte der Spinnen überhaupt und der Engelländischen Spinnen insbesonderheit, aus dem Lateinischen übersetzt, und mit Anmerkungen vermehrt. Mit 5. Kupfertafeln. - pp. I-XXVIII [= 1-28], 1-302, [1-13], Tab. I-V [= 1-5]. Christoph August Reußner, Quedlinburg & Blankenburg.

MENGE, A. 1869. Preussische Spinnen. III. Abtheilung. *Schriften der Naturforschenden Gesellschaft in Danzig* (N. F.) **2**: 219-264.

MILLER, F. 1971. Pavouci-Araneida. *Klíč zvířeny ČSSR* **4**: 51-306.

MCHEIDZE, T. S. 1997. [*Spiders of Georgia: Systematics, Ecology, Zoogeographic Review*]. Tbilisi University, 390 pp.

OLIVIER, G. A. 1789. Araignée, Aranea. In: *Encyclopédie Méthodique, Histoire Naturelle, Insectes. Tome quatrième*. Panckoucke, Paris, pp. 173-240. doi:10.5962/bhl.title.82248

PAIK, K. Y. 1995. Korean spiders of the genus *Steatoda* (Araneae: Theridiidae). I. *Korean Arachnology* **11**(1): 1-14.

PALMGREN, P. 1974. Die Spinnenfauna Finnlands und Ostfennoskandiens. V. Theridiidae und Nesticidae. *Fauna Fennica* **26**: 1-54.

PANZER, G. W. F. 1804. *Systematische Nomenklatur über weiland Herrn Dr. Jacob Christian Schäffers natürlich ausgemahlte Abbildungen regensburgischer Insekten*. Joan. Jac. Palm, Erlangae [= Johann Jakob Palm, Erlangen], 160 pp. [the plate and figure numbers refer to (partly unnamed) species, figured by Schäffer, presumably in 1791 (or 1766), see Univ. Göttingen and doi 10.5962/bhl.title.9162

PLATNICK, N. I. 1989. *Advances in spider taxonomy 1981-1987: a supplement to Brignoli's* A catalogue of the Araneae described between 1940 and 1981. Manchester University Press, 673 pp.

ROBERTS, M. J. 1985. *The spiders of Great Britain and Ireland,* Volume 1: Atypidae to Theridiosomatidae. Harley Books, Colchester, England, 229 pp.

ROBERTS, M. J. 1998. *Spinnengids*. Tirion, Baarn, Netherlands, 397 pp.

ROEWER, C.F. 1942. *Katalog der Araneae von 1758 bis 1940 1. Band.* Royal Belgian Institute for Natural Sciences, Brussels, 1040 pp.

SCHENKEL, E. 1925. Beitrag zur Kenntnis der schweizerschen Spinnenfauna. *Revue Suisse de Zoologie* **32**: 253-318.

SCHENKEL, E. 1926. Beitrag zur Kenntnis der schweizerschen Spinnenfauna. II. Teil. *Revue Suisse de Zoologie* **33**: 301-316.

SIMON, E. 1881. *Les arachnides de France. Tome cinquième, première partie*. Roret, Paris, 180 pp, pl. 25.

SIMON, E. 1883. Études arachnologiques. 14e Mémoire. XXI. Matériaux pour servir à la faune arachnologique des îles de l'Océan Atlantique (Açores, Madère, Salvages, Canaries, Cap Vert, Sainte-Hélène et Bermudes). *Annales de la Société Entomologique de France* (6) **3**: 259-314.

SIMON, E. 1908. Etude sur les arachnides recueillis par M. le Dr. Klaptocz en Tripolitaine. *Zoologische Jahrbücher, Abteilung für Systematik, Geographie und Biologie der Tiere* **26**: 419-438.

SIMON, E. 1914. *Les arachnides de France. Synopsis générale et catalogue des espèces françaises de l'ordre des Araneae. Tome VI. 1re partie*. Roret, Paris, pp. 1-308.

SMITH, H. 2018. Obituary: Richard Davis Curtis (Dick) Jones 1943-2017. *Newsletter of the British Arachnological Society* **141**: 12.

SONG, D. X., ZHU, M. S. & CHEN, J. 1999. *The spiders of China*. Hebei Science and Technology Publishing House, Shijiazhuang, 640 pp.

SONG, D. X., ZHU, M. S. & CHEN, J. 2001. *The Fauna of Hebei, China: Araneae*. Hebei Science and Technology Publishing House, Shijiazhuang, 510 pp.

SUNDEVALL, C. J. 1831. Svenska Spindlarnes Beskrifning. Fortsättning. Separate, published by P. A. Norstedt & Söner, Stockholm, pp. 1-41.

SUNDEVALL, C. J. 1833. *Conspectus Arachnidum*. C. F. Berling, Londini Gothorum [= Lund], 39 pp.

THORELL, T. 1856. Recensio critica aranearum suecicarum quas descripserunt Clerckius, Linnaeus, de Geerus. *Nova Acta Regiae Societatis Scientiarum Upsaliensis* (3) **2**(1): 61-176.

THORELL, T. 1869. On European spiders. Review of the European genera of spiders, preceded by some observations on zoological nomenclature [second part]. *Nova Acta Regiae Societatis Scientiarum Upsaliensis* **(3) 7(5):** 1-108.

THORELL, T. 1875. Descriptions of several European and North African spiders. *Kongliga Svenska Vetenskaps-Akademiens Handlingar* **13(5)**: 1-204.

TRIPATHI, R., JANGID, A. K., SUDHIKUMAR, A. V., SILIWAL, M. & DUTTA, S. 2023. *Steatoda albomaculata* (De Geer, 1778) (Araneae: Theridiidae): an addition to the spider fauna of India. *Journal of the Bombay Natural History Society* **119**(3, 2022): 266-272. doi:10.17087/jbnhs/2022/v119/160688

TÜRKEŞ, T. & BALLI, Z. D. 2022. New record of a comb-footed spider of genus *Steatoda* (Araneae: Theridiidae) from Turkish araneo-fauna. *Serket* **18(3)**: 328-330.

VAN KEER, J. & BOSMANS, R. 2010. Description of the male of *Steatoda ephippiata* (Araneae: Theridiidae). *Arachnologische Mitteilungen* **39**: 22-24. doi:10.5431/aramit3903

VANUYTVEN, H. 2021. The Theridiidae of the World. A key to the genera with their diagnosis and a study of the body length of all known species. *Newsletter of the Belgian arachnological Society* **35**(Supplement): 1-363.

WALCKENAER, C. A. 1805. *Tableau des aranéides ou caractères essentiels des tribus, genres, familles et races que renferme le genre Aranea de Linné, avec la désignation des espèces comprises dans chacune de ces divisions*. Dentu, Paris, 88 pp.

WALCKENAER, C. A. 1841. *Histoire naturelle des Insectes. Aptères. Tome deuxième*. Roret, Paris, 549 pp., pl. 16-22. doi:10.5962/bhl.title.61095

WESTRING, N. 1861. Araneae svecicae. *Göteborgs Kungliga Vetenskaps och Vitterhets Samhälles Handlingar* **7**: 1-615.

WIEHLE, H. 1934. Zur Morphologie und Biologie einer paläarktischen *Lithyphantes*-Art (*L. gerhardti* sp. nov.). *Zoologischer Anzeiger* **106**: 71-84.

WIEHLE, H. 1937. Spinnentiere oder Arachnoidea. 26. Familie. Theridiidae oder Haubennetzspinnen (Kugelspinnen). *Die Tierwelt Deutschlands* **33**: 119-222.

WORLD SPIDER CATALOG (WSC). 2024. World Spider Catalog. Version 24. Natural History Museum Bern, online at http://wsc.nmbe.ch, last accessed on 28 March 2024, doi: 10.24436/2.

WUNDERLICH, J. 2008. On extant and fossil (Eocene) European comb-footed spiders (Araneae: Theridiidae), with notes on their subfamilies, and with descriptions of new taxa. *Beiträge zur Araneologie* **5**: 140-469, 792-794, 796-800, 803, 819-859.

YAMAKAWA, M. & KUMADA, K. 1979. [Spiders of Tanzawa mountain area]. *Atypus* **74**: 1-14.

YOSHIDA, H. 2001. The spider genera *Robertus*, *Enoplognatha*, *Steatoda* and *Crustulina* (Araneae: Theridiidae) from Japan. *Acta Arachnologica* **50**: 31-48.

YOSHIDA, H. 2009. Uloboridae, Theridiidae, Ctenidae. In: Ono, H. (ed.) *The spiders of Japan with keys to the families and genera and illustrations of the species*. Tokai University Press, Kanagawa, pp. 142-147, 356-393, 467-468. doi:doi.org/10.2476/asjaa.50.31

ZAMANI, A., MIRSHAMSI, O., RASHIDI, P., MARUSIK, Y. M., MORADMAND, M. & BOLZERN, A. 2016. New data on the spider fauna of Iran (Arachnida: Aranei), part III. *Arthropoda Selecta* **25**(1): 99-114. doi:10.15298/arthsel.25.1.10

ZAMANI, A., DIMITROV, D., Weiss, I., ALIMOHAMMADI, S., RAFIEI-JAHED, R., ESYUNIN, S. L., MORADMAND, M., CHATZAKI, M. & MARUSIK, Y. M. 2020. New data on the spider fauna of Iran (Arachnida: Araneae), part VII. *Arachnology* **18(6)**: 569-591. doi:10.13156/arac.2020.18.6.569

ZARIKIAN, N. A. 2022. New records on Salticidae and Theridiidae (Araneae) spiders from Armenia. *Bulletin of the Iraq Natural History Museum* **17**(2): 169-185. doi:10.26842/binhm.7.2022.17.2.0169

ZHANG, F., PENG, J. Y. & ZHANG, B. S. 2022. *Spiders of Mt. Xiaowutai*. Science Press, Beijing, 387 pp.

ZHU, M. S. 1998. *Fauna Sinica: Arachnida: Araneae: Theridiidae*. Science Press, Beijing, 436 pp.

Figures

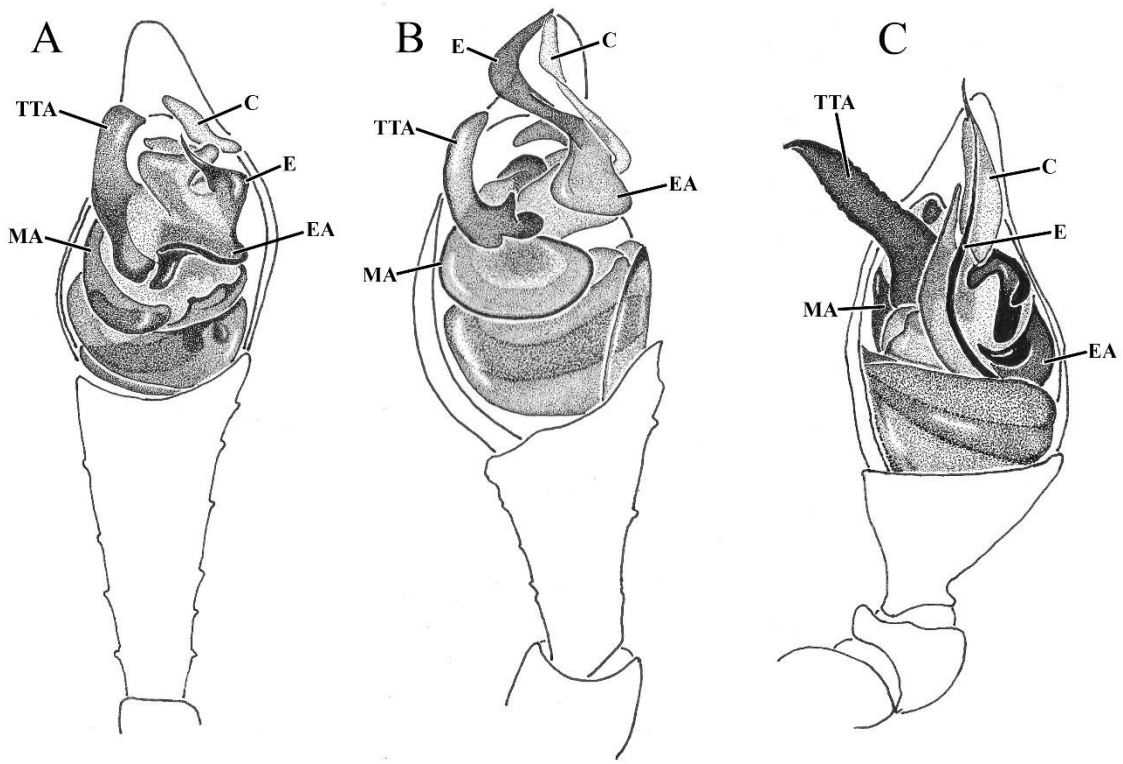

Figure 1: Labeled *Steatoda* male palps, ventral view. **A.** *Steatoda castanea*. **B.** *Steatoda nobilis*. **C.** *Steatoda albomaculata*. Abbreviations: C, conductor; E, embolus; EA, embolar apophysis; MA, median apophysis; TTA, theridiid tegular apophysis.

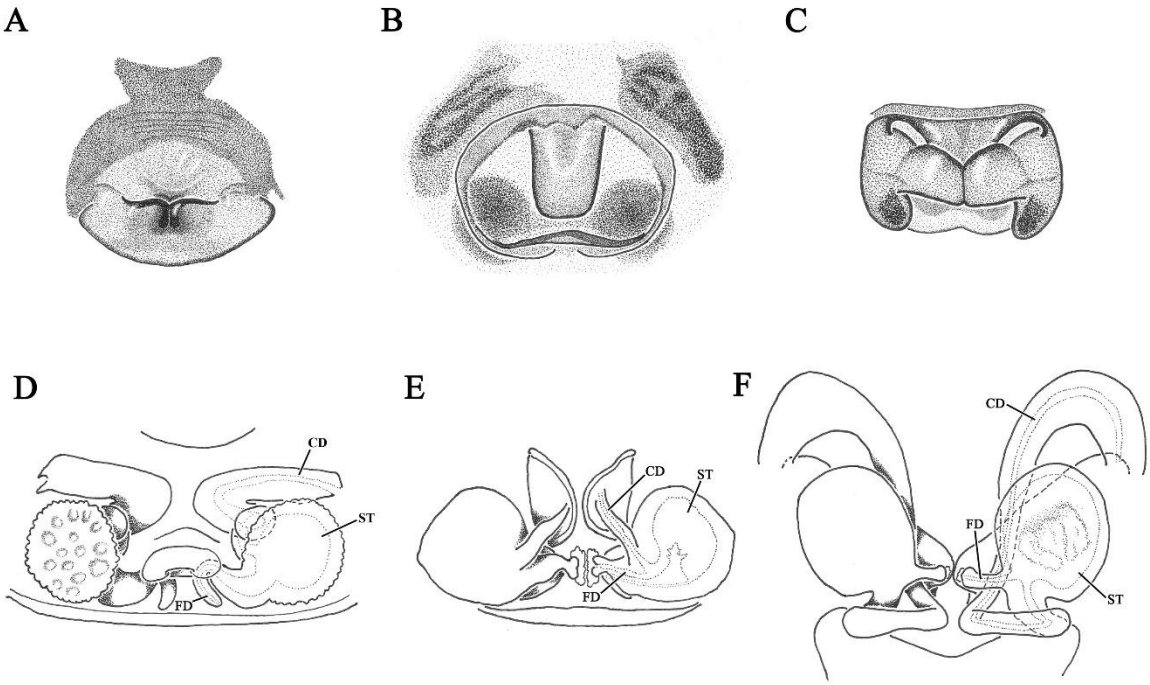

Figure 2: Epigynes and labeled vulvae. **A, D.** *Steatoda castanea*. **B, E.** *Steatoda nobilis*. **C, F.** *Steatoda albomaculata*. Abbreviations: CD, copulatory duct; FD, fertilisation duct; ST, spermatheca.

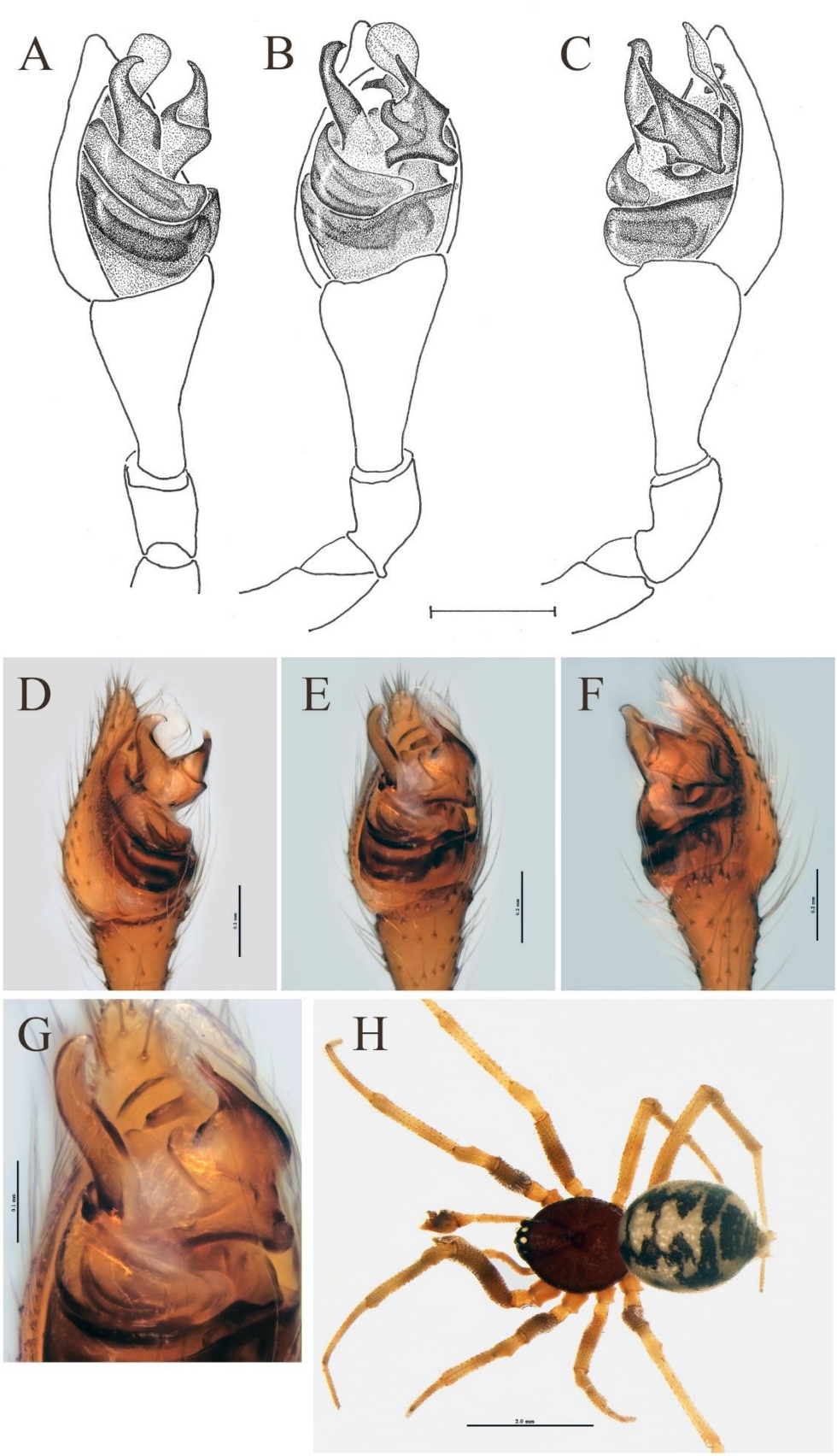

Figure 3: *Steatoda dickjonesi* sp. nov. male. **A-C.** male holotype MMUE G7605.2218. **A-G.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male palp, ve, detail. **H.** Male habitus, do. Scale bars. A-C. 0.25 mm. D-F. 0.2 mm. G. 0.1 mm. H. 2 mm.

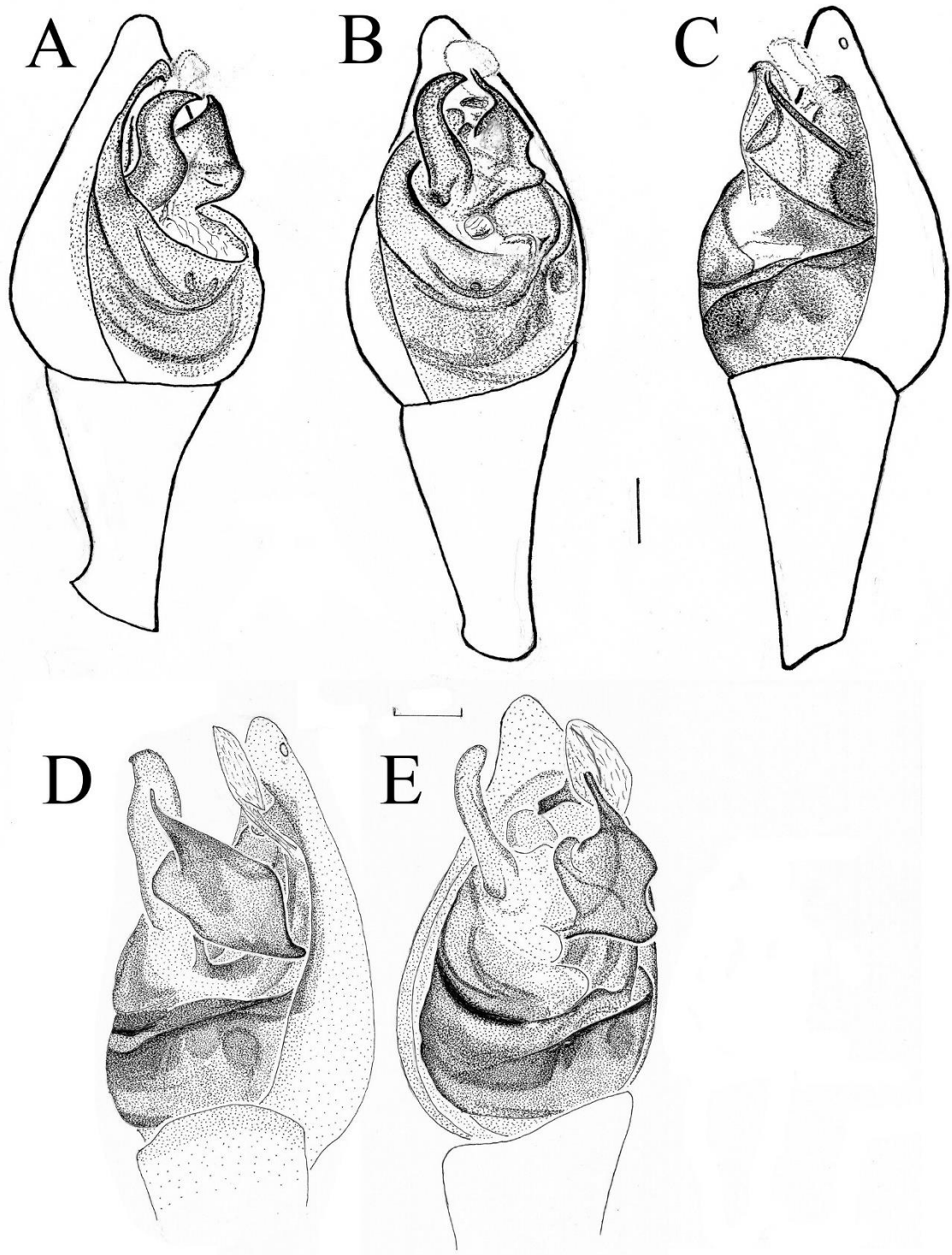

Figure 4: Unpublished drawings of *Steatoda dickjonesi* sp. nov. by the late Dick Jones, courtesy Dmitri Logunov, left male palp. **A.** Male palp, pl. **B, E.** Male palp, ve. **C, D.** Male palp, rl. Scale bars. A-E. 0.1 mm.

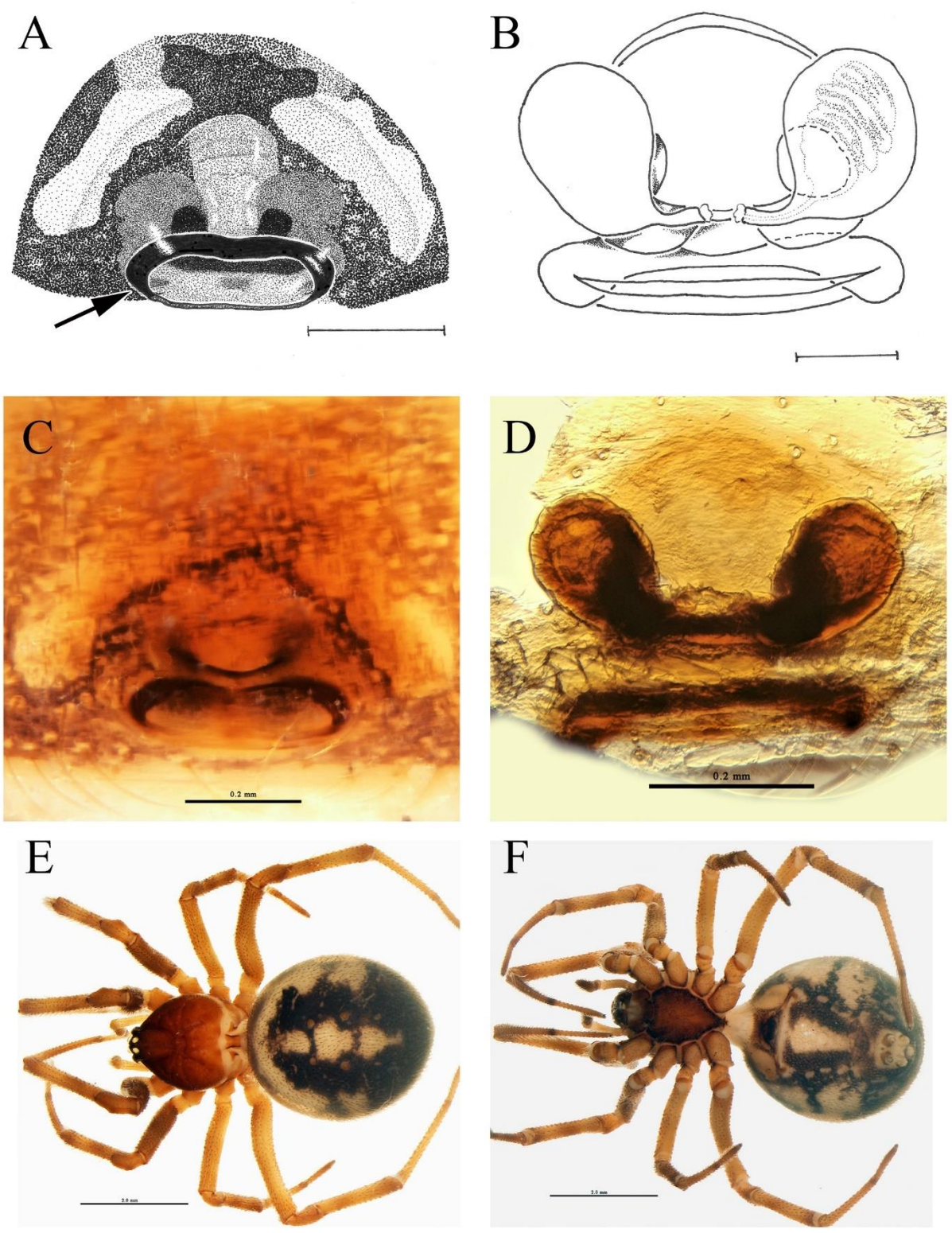

Figure 5: *Steatoda dickjonesi* sp. nov. female. **A.** female paratype MMUE G7605.2243. **B.** female CJVK G7605.2256. **A, C.** Epigyne, sausage-shaped transversal cavity indicated by arrow. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. Scale bars. A. 0.25 mm. B. 0.1 mm. C, D. 0.2 mm. E, F. 2 mm.

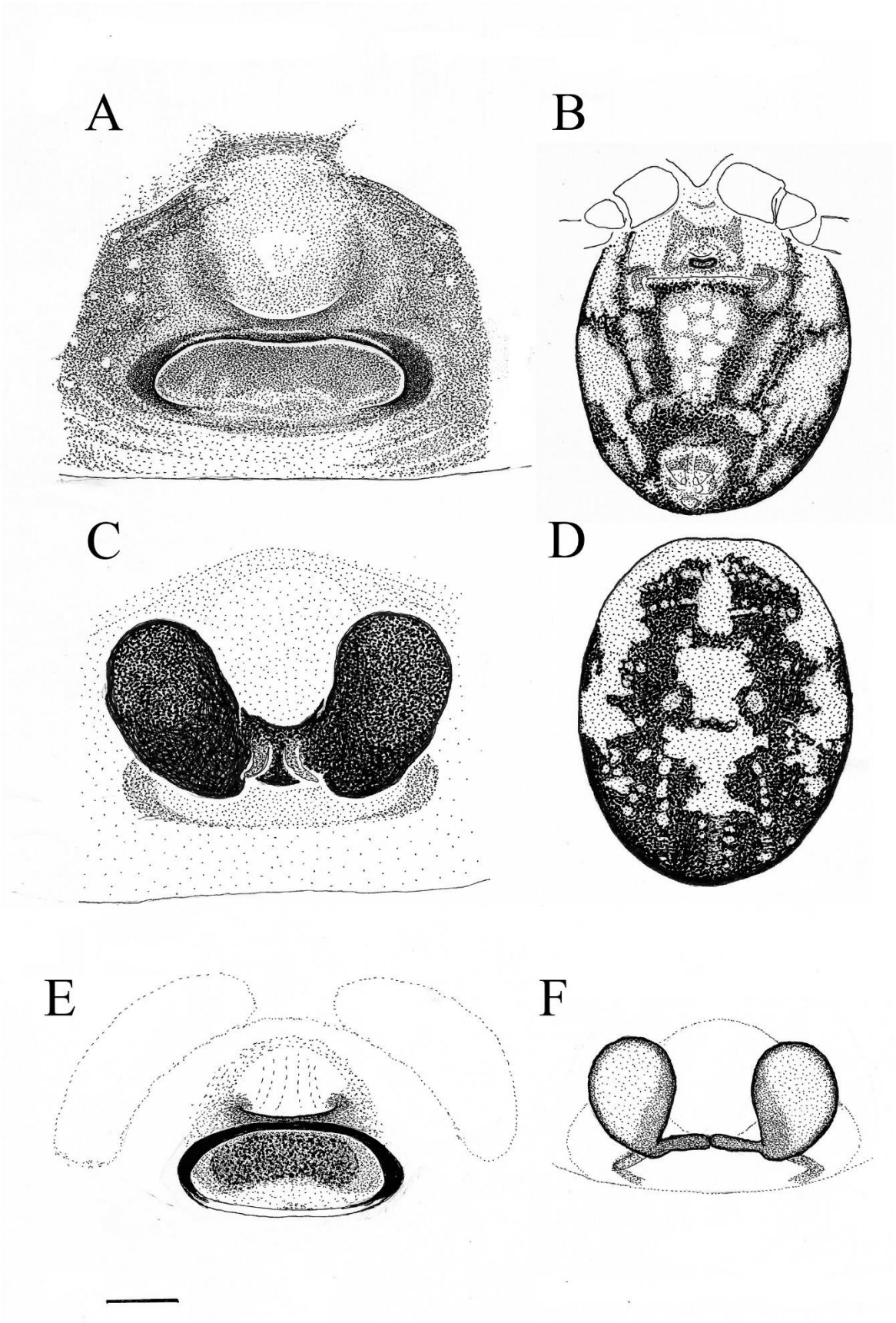

Figure 6: Unpublished drawings of *Steatoda dickjonesi* sp. nov. by the late Dick Jones, courtesy Dmitri Logunov, female. **A, E.** Epigyne. **B.** Abdomen, ve. **C, F.** Vulva, do. **D.** Abdomen, do. Scale bar. E. 0.1 mm.

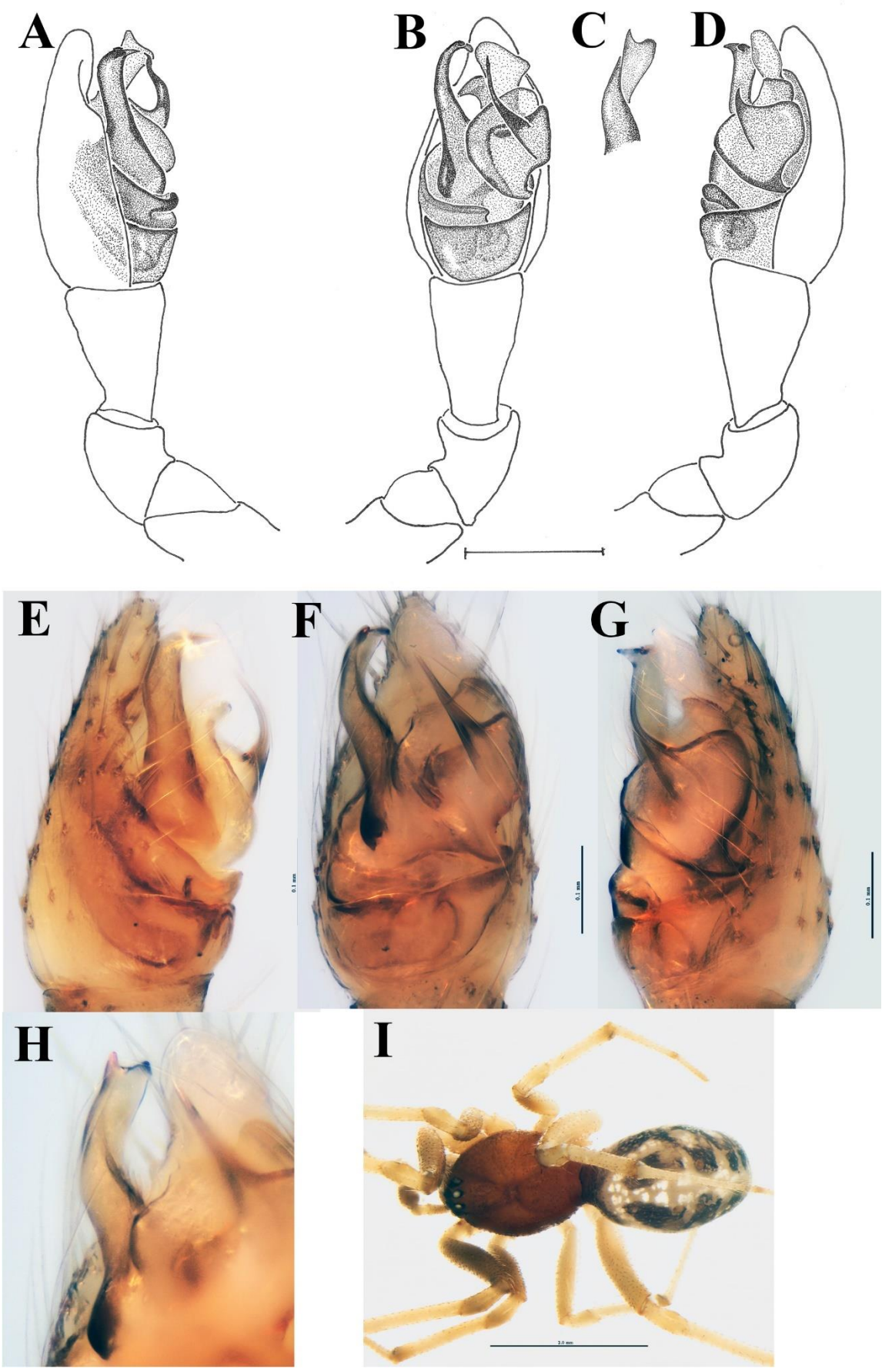

Figure 7: *Steatoda ingeae* sp. nov., male holotype from Anza, Morocco, RBINS. **A-H.** Left male palp. **A, E.** Male palp, pl. **B, F.** Male palp, ve. **C, H.** TTA, detail. **D, G.** Male palp, rl. **I.** Male habitus, do. Scale bars. A-D. 0.25 mm. E-G. 0.1 mm. I. 2 mm.

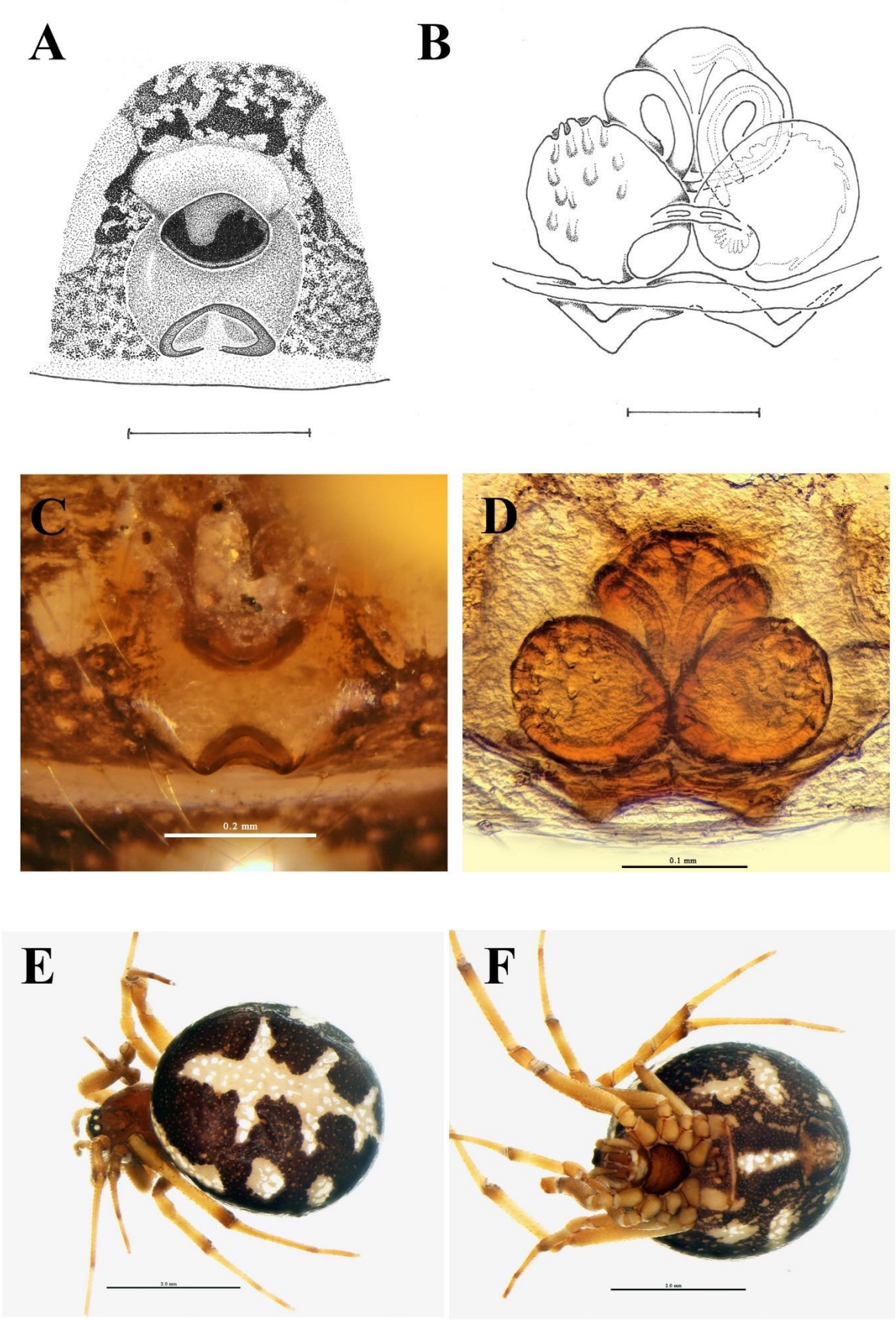

Figure 8: *Steatoda ingeae* sp. nov., female paratype from Anza, Morocco, RBINS. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. Scale bars. A. 0.25 mm. B, D. 0.1 mm. C. 0.2 mm. E, F. 2 mm.

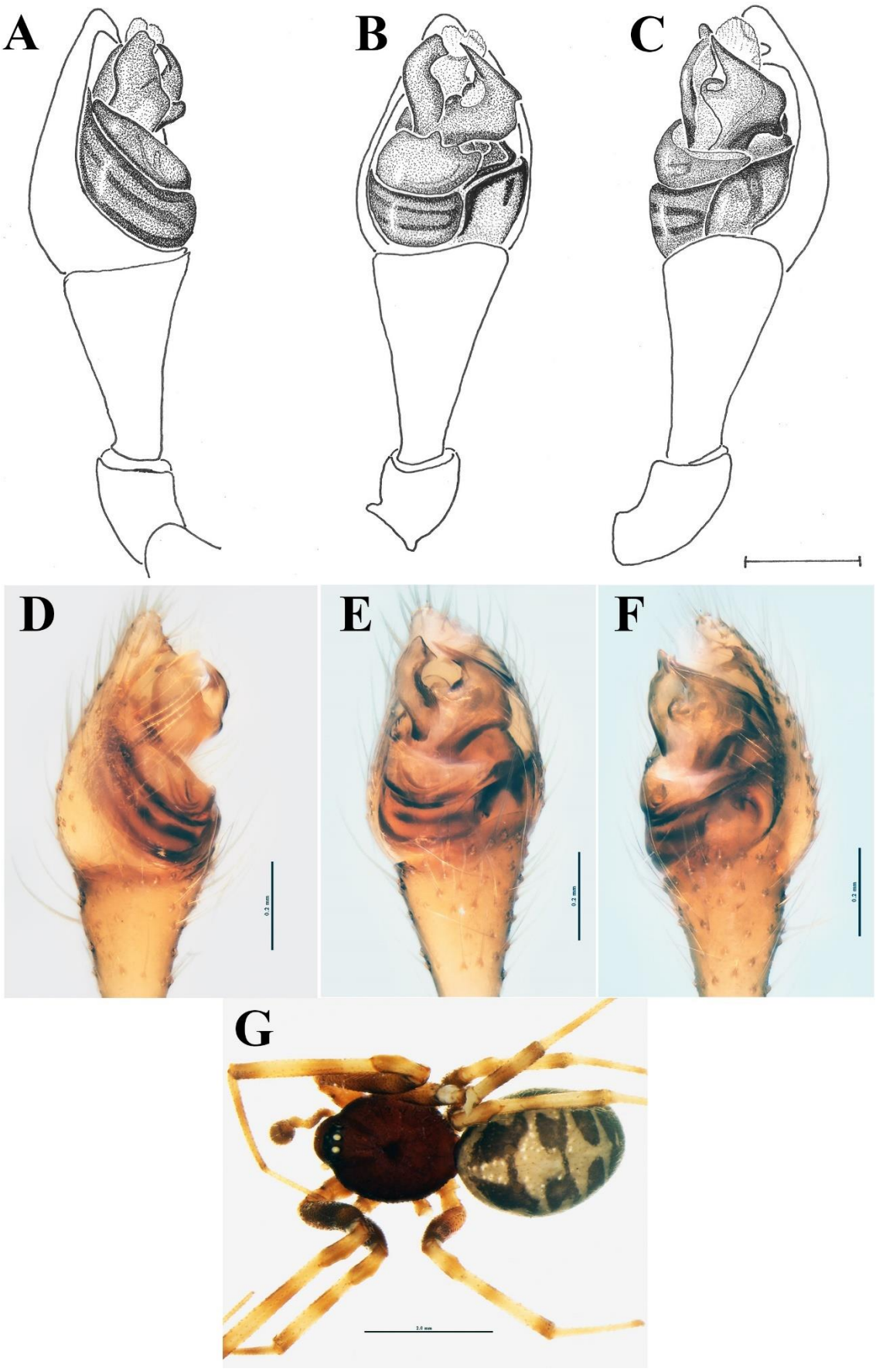

Figure 9: *Steatoda koeni* sp. nov., male holotype from Azrou, Morocco, RBINS. **A-F.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, do. Scale bars. A-C. 0.25 mm. D-F. 0.2 mm. G. 2 mm.

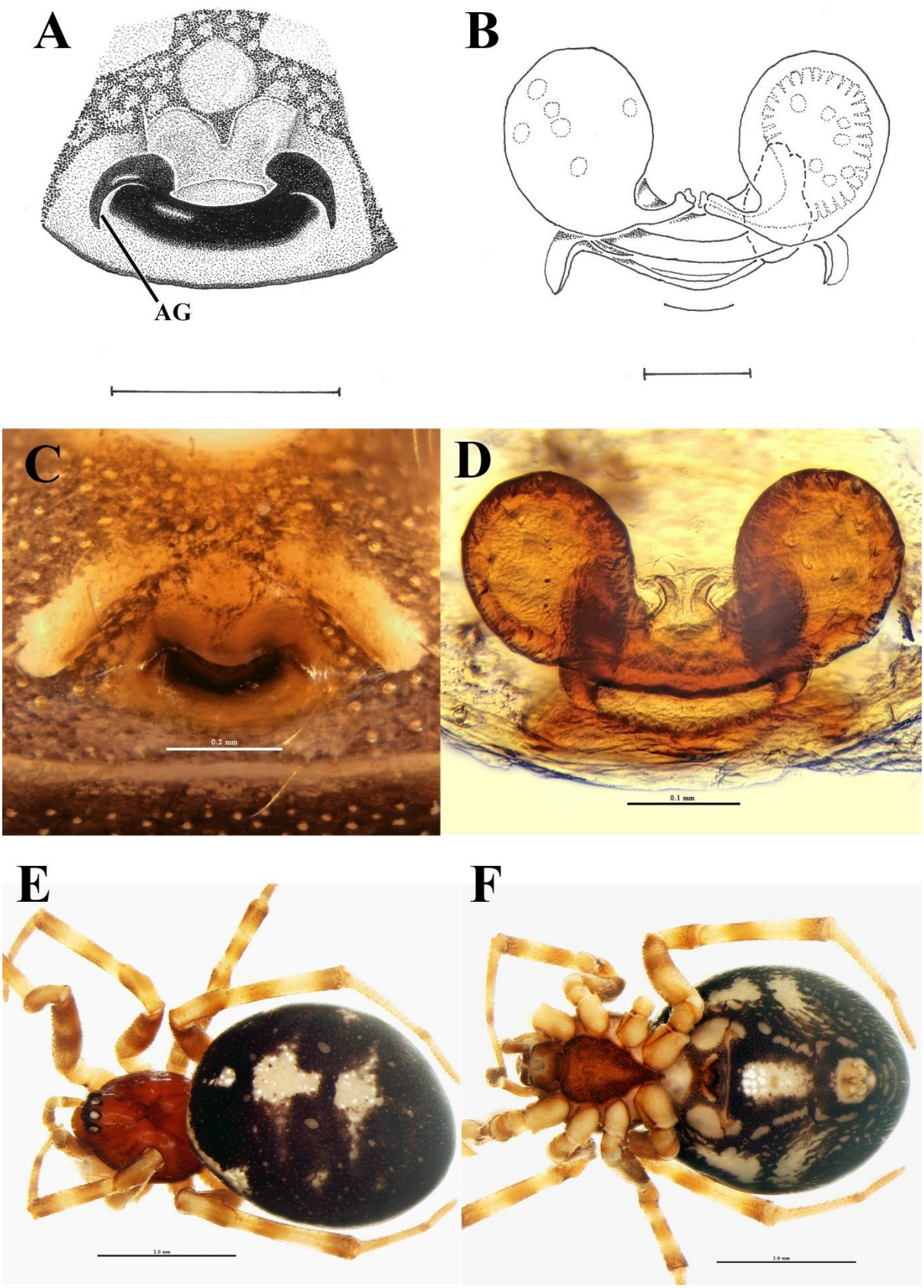

Figure 10. *Steatoda koeni* sp. nov., female paratype from Azrou, Morocco, RBINS. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. **AG.** anchoring groove. Scale bars. A. 0.25 mm. B, D. 0.1 mm. C. 0.2 mm. E, F. 2 mm.

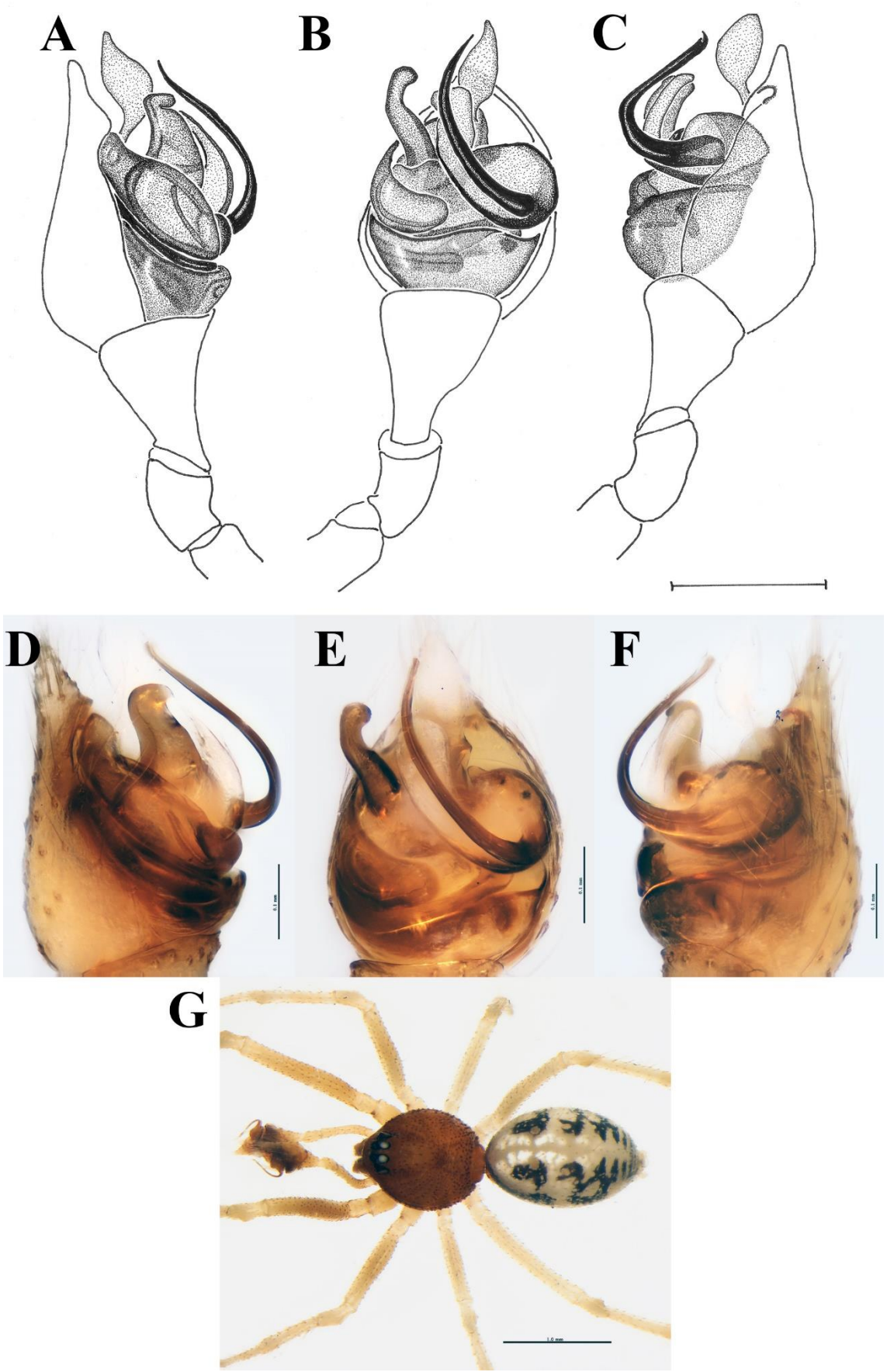

Figure 11: *Steatoda verae* sp. nov., male holotype MMUE G7605.982. **A-F.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, do. Scale bars. A-C. 0.25 mm. D-F. 0.1 mm. G. 1 mm.

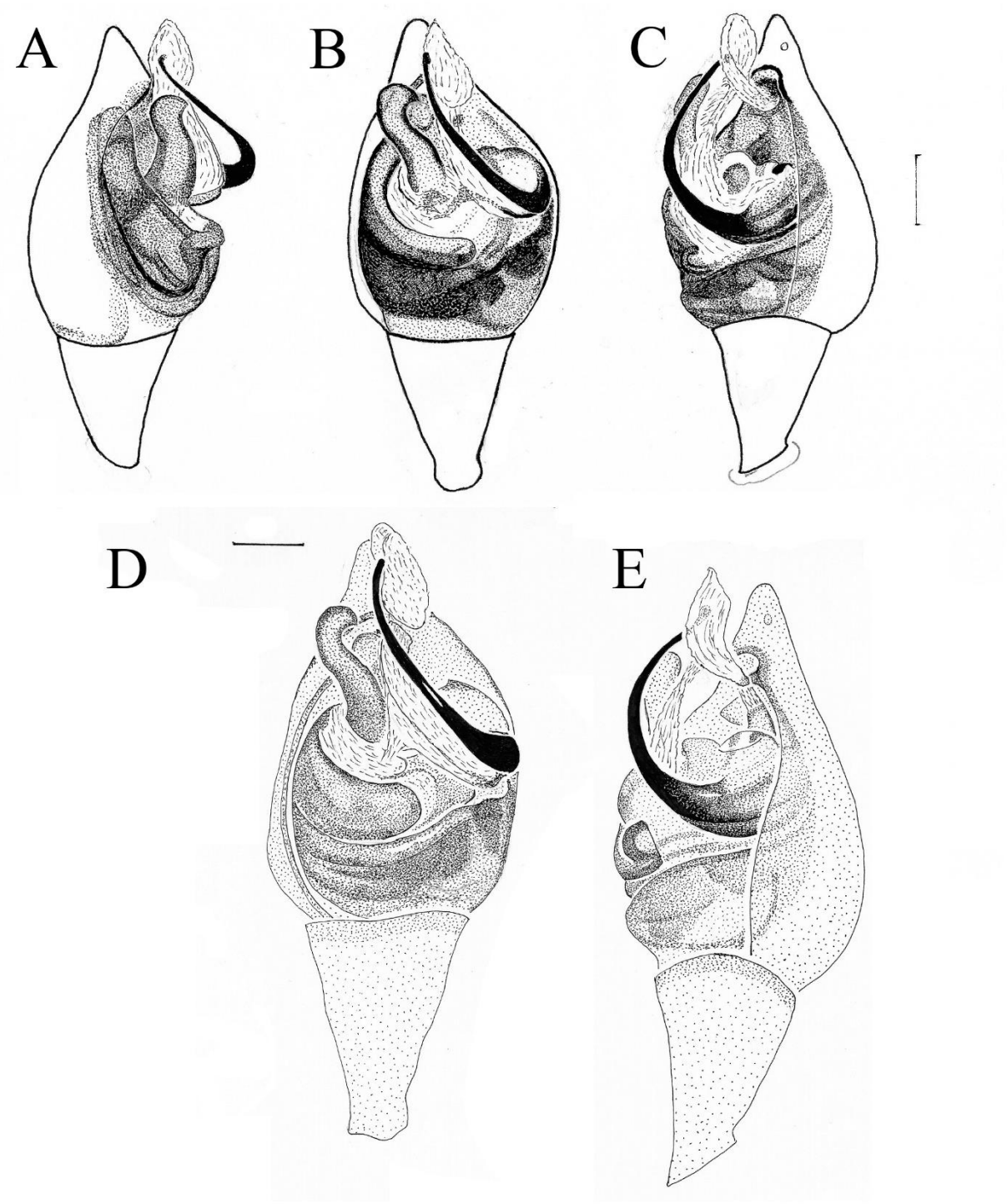

Figure 12: Unpublished drawings of *Steatoda verae* sp. nov. by the late Dick Jones, courtesy Dmitri Logunov, left male palp. **A.** Male palp, pl. **B, D.** Male palp, ve. **C, E.** Male palp, rl. Scale bars. A-E. 0.1 mm.

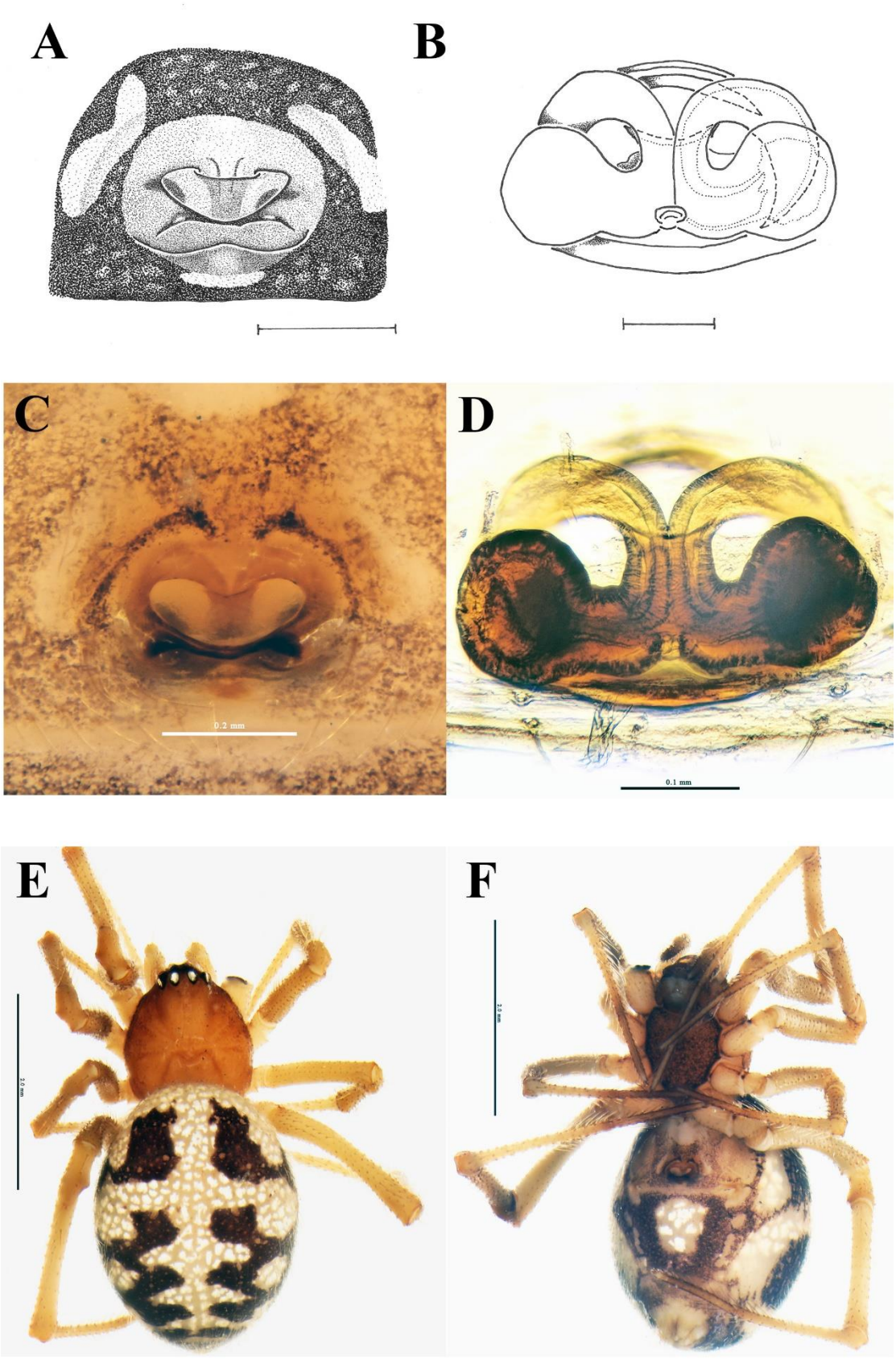

Figure 13: *Steatoda verae* sp. nov, female specimens. **A, C, E-F.** MMUE G7605.980. **B, D.** MMUE G7605.983. **A, C.** Epigyne. **B, D**. Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ventrolateral. Scale bars. A. 0.25 mm. B, D. 0.1 mm. C. 0.2 mm. E, F. 2 mm.

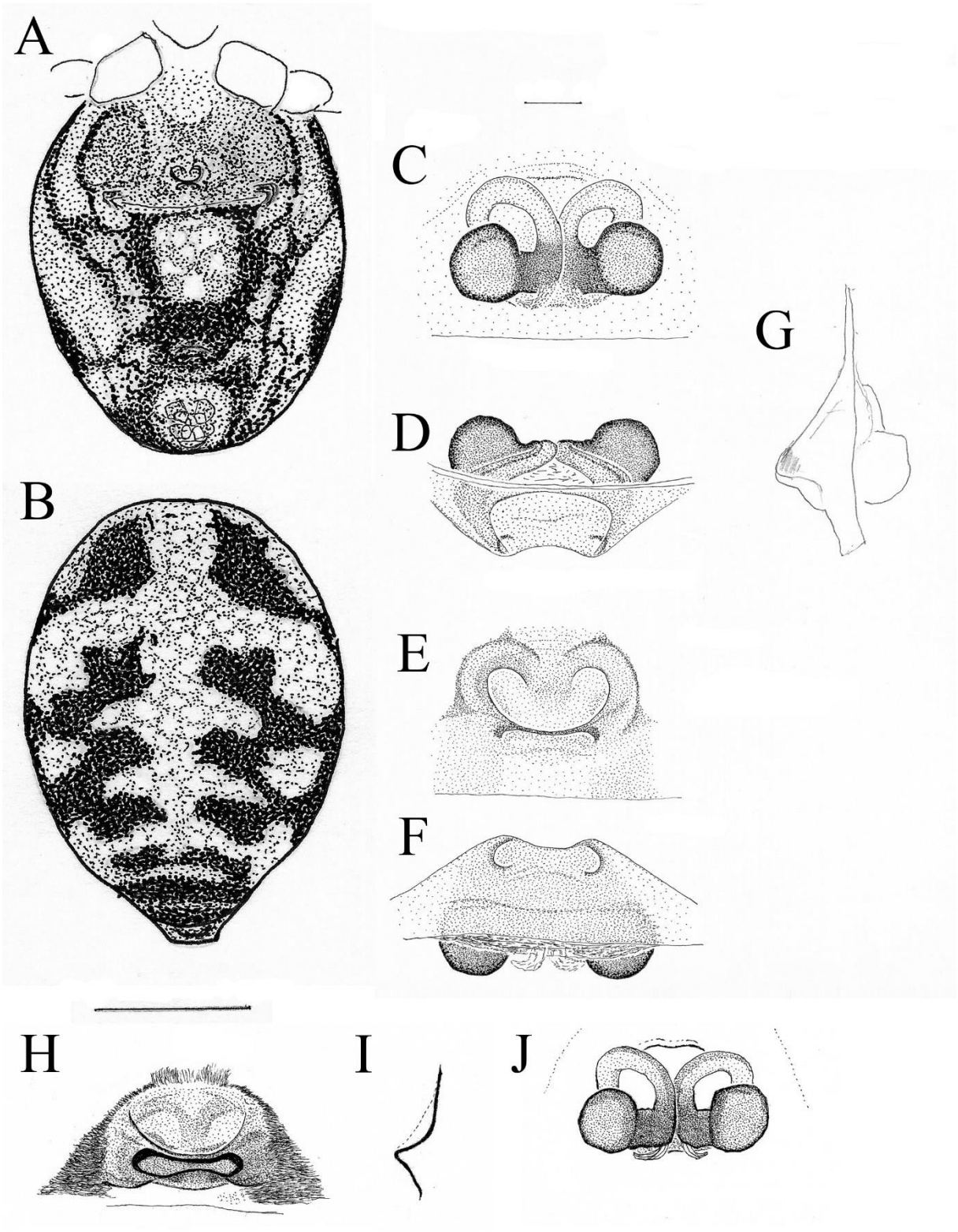

Figure 14: Unpublished drawings of *Steatoda* verae sp. nov. by the late Dick Jones, courtesy Dmitri Logunov, female. **A.** Abdomen, ve. **B.** Abdomen, do. **C.** Vulva, do. **D.** Vulva, anterior view. **E.** Epigyne, ve. **F.** Vulva, posterior view. **G.** Epigyne, lateral view. **H.** Epigyne. **I.** Epigyne, lateral view. **J.** vulva, do. Scale bars. A, B. 1 mm. C-G. 0.1 mm.

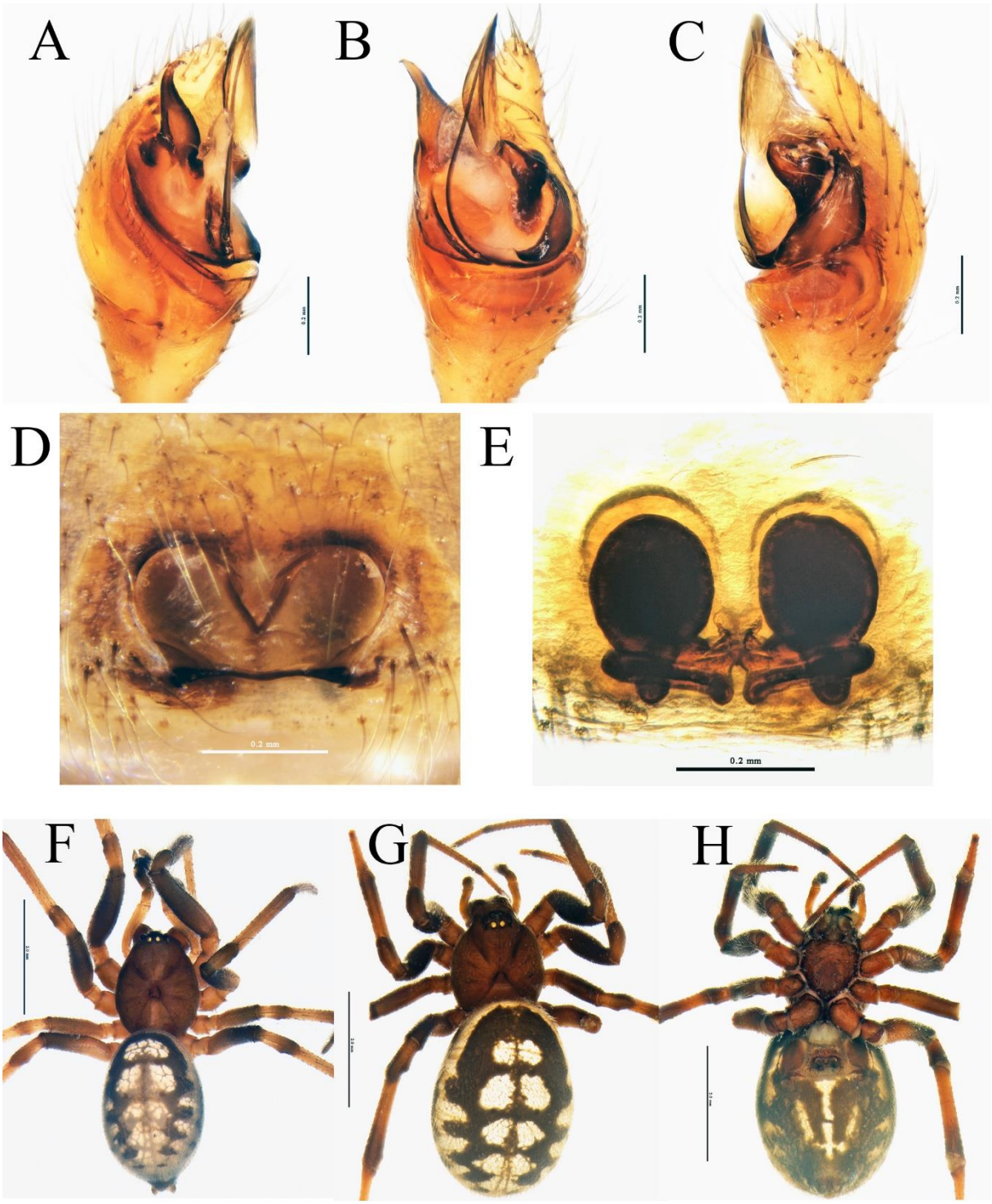

Figure 15: *Steatoda albocincta*. Specimens from Mazarrón, Murcia, Spain, CJVK 2382. **A-C, F.** Male. **D, E, G, H.** Female. **A-C.** Left male palp. **A.** Male palp, pl. **B.** Male palp, ve. **C.** Male palp, rl. **D.** Epigyne. **E.** Vulva, do. **F.** Male habitus, do. **G.** Female habitus, do. **H.** Female habitus, ve. Scale bars. A-E. 0.2 mm. F-H. 2 mm.

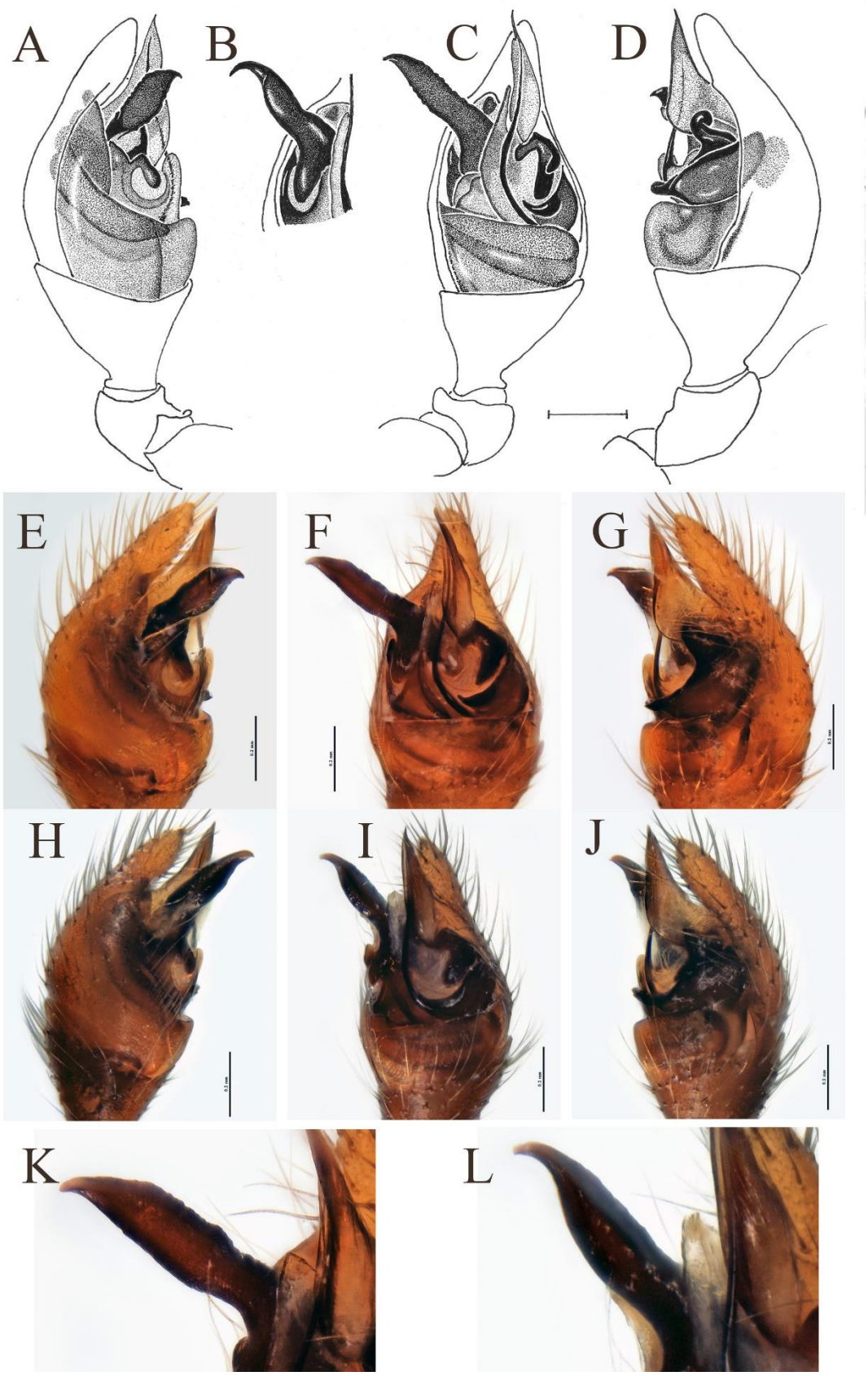

Figure 16: *Steatoda albomaculata* and *Steatoda albomaculata infuscata*, left male palp. **A, C, D, E-G, K.** *Steatoda albomaculata infuscata*, male from Switzerland, Basel region, NMB, Schenkel leg. **B, H-J, L.** *Steatoda albomaculata*, male from Belgium, Kalmthout. **A, E, H.** Male Palp, pl. **C, F, I.** Male palp, ve. **D, G, J.** Male palp, rl. **B, K, L.** Theridiid Tegular Apophysis. Scale bars. A-D. 0.25 mm. E-J. 0.2 mm.

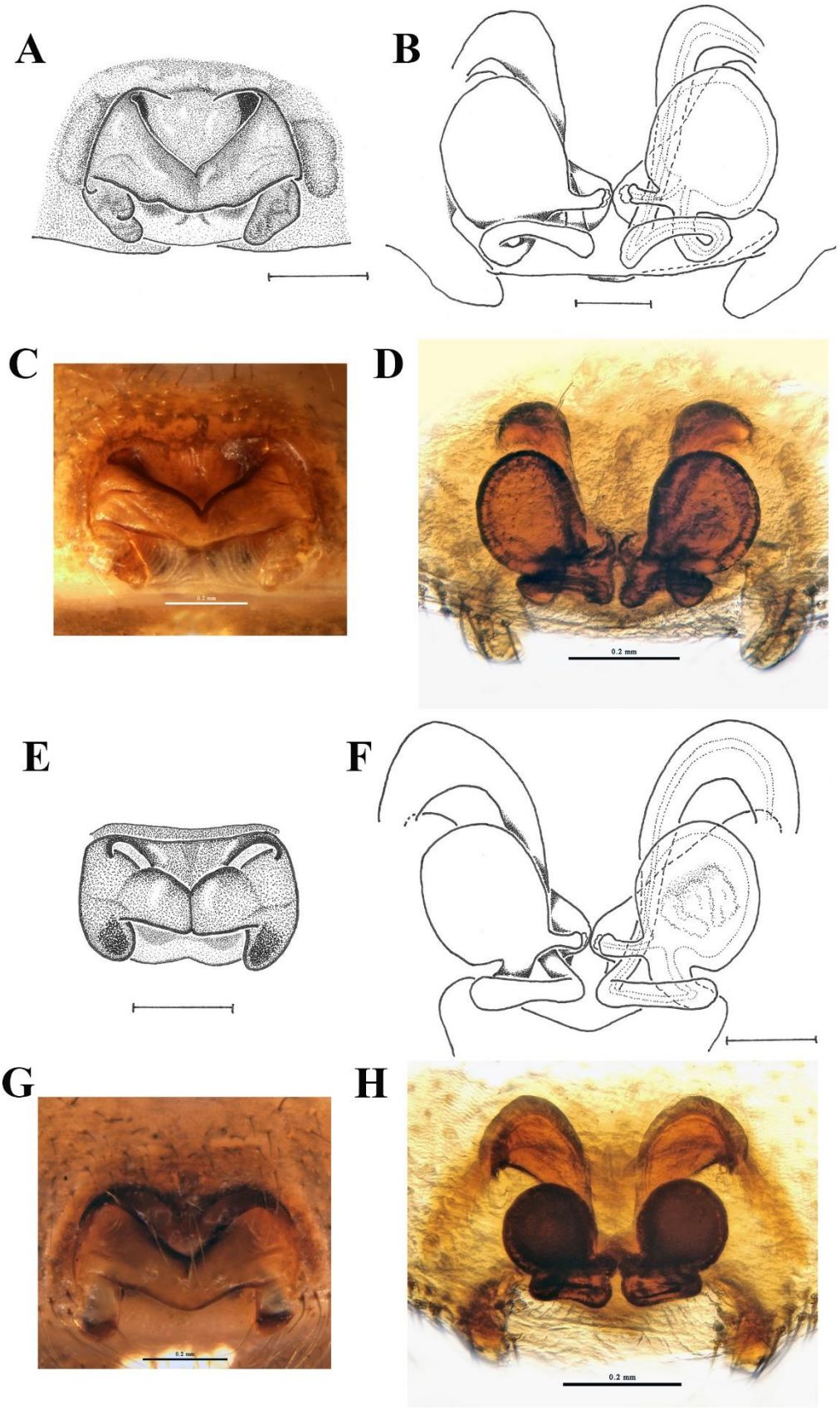

Figure 17: *Steatoda albomaculata* and *Steatoda albomaculata infuscata*, female genitalia. **A-D.** *Steatoda albomaculata infuscata*, syntypus. **E-H.** *Steatoda albomaculata*, females from Belgium, Kalmthout. **A, C, E, G.** Epigyne. **B, D, F, H.** Vulva, do. Scale bars. A, E. 0.25 mm. C, D, G, H. 0.2 mm. B, F. 0.1 mm.

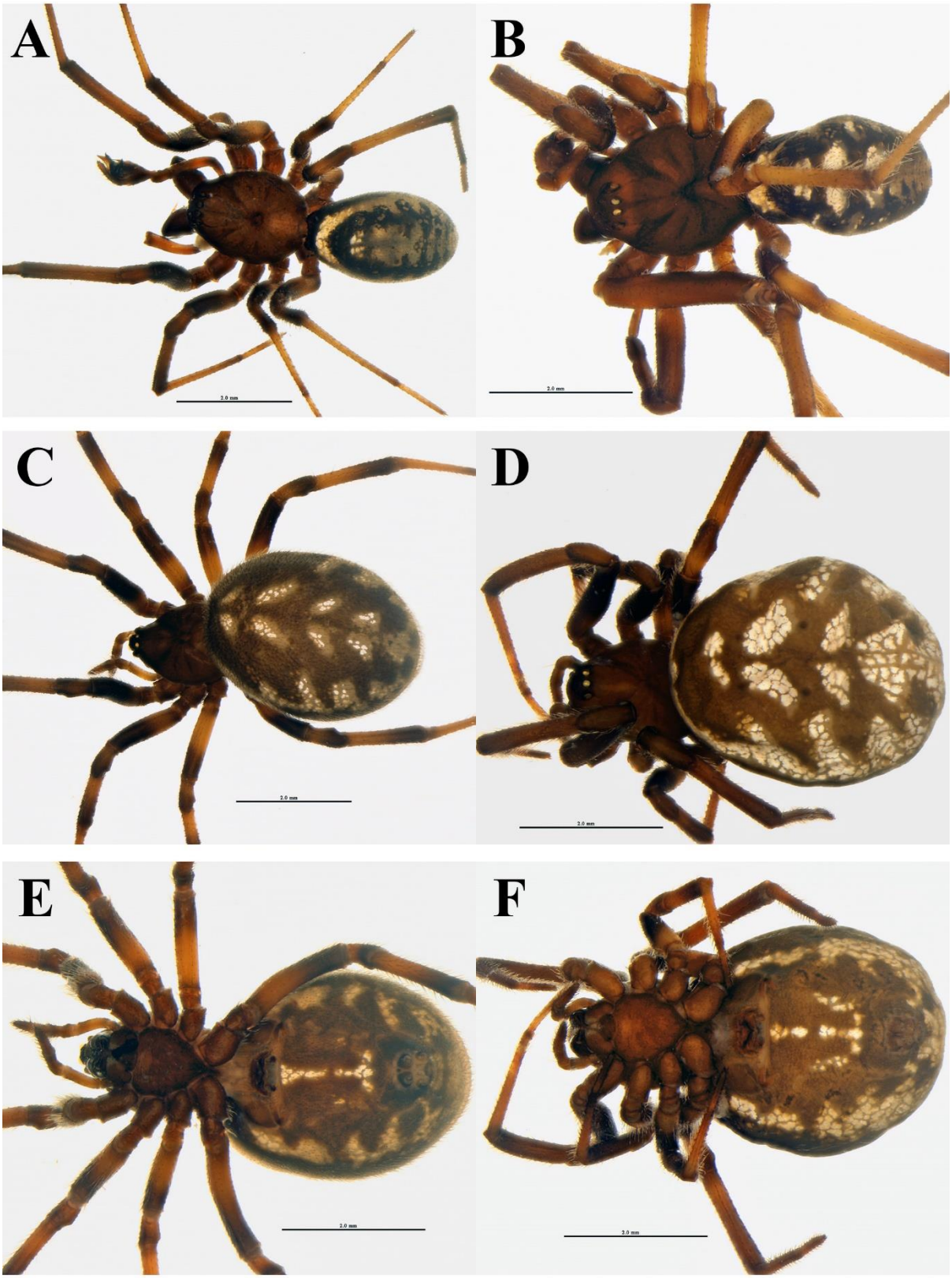

Figure 18: *Steatoda albomaculata* and *Steatoda albomaculata infuscata*, habitus. **A, C, E.** *Steatoda albomaculata*, females from Belgium, Kalmthout. **B, D, F.** *Steatoda albomaculata infuscata*, **D, F.** syntypus. **A, B.** Male, do. **C, D.** Female, do. **E, F.** Female, ve. Scale bars. 2 mm.

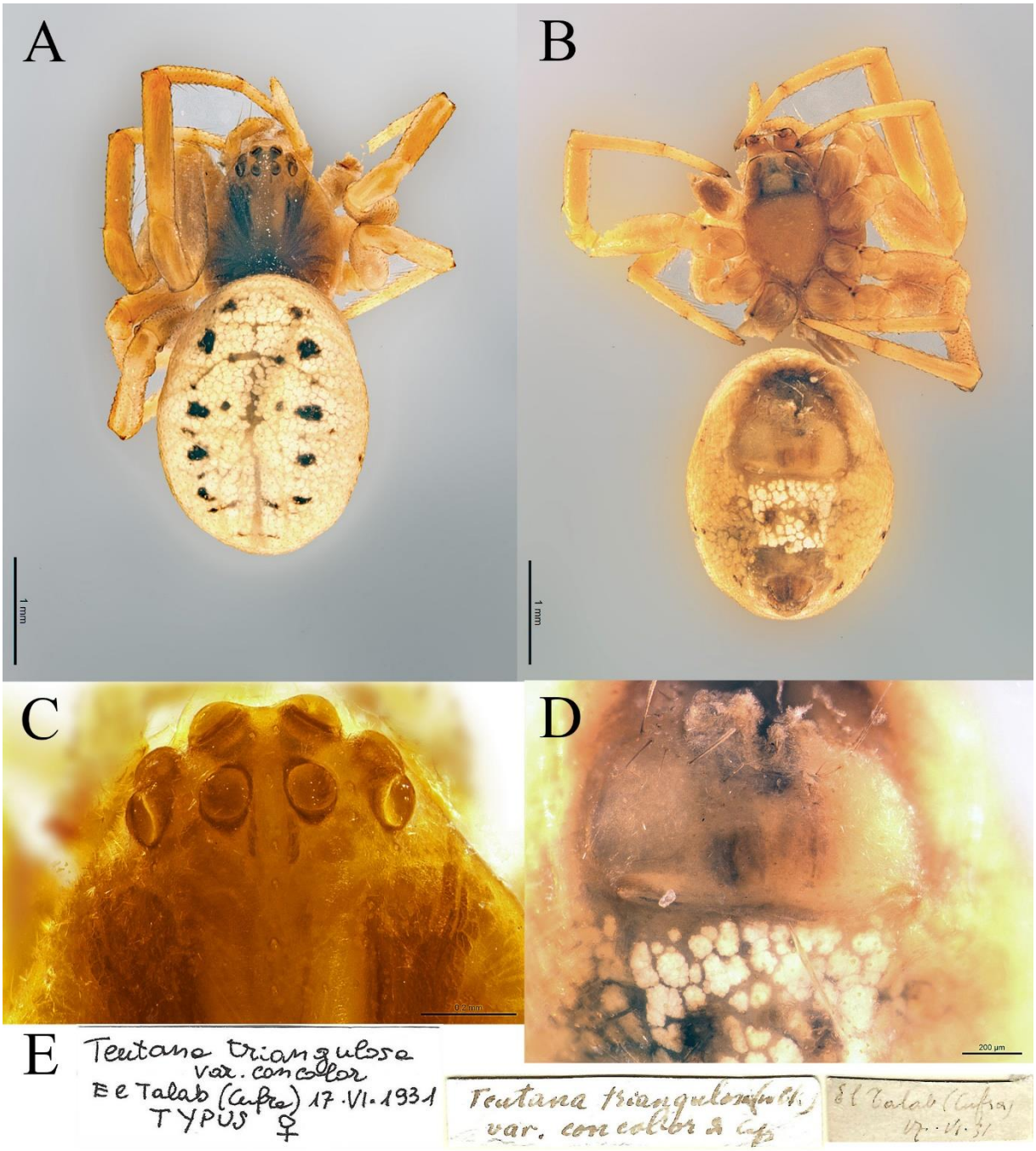

Figure 19: *Steatoda concolor*, holotypus, MCSNG. **A.** Habitus, do. **B.** Habitus, ve. **C.** eye region, do. **D.** Subadult epigyne, ve. **E.** Accompanying labels. Scale bars. A, B. 1 mm. C, D. 0.2 mm.

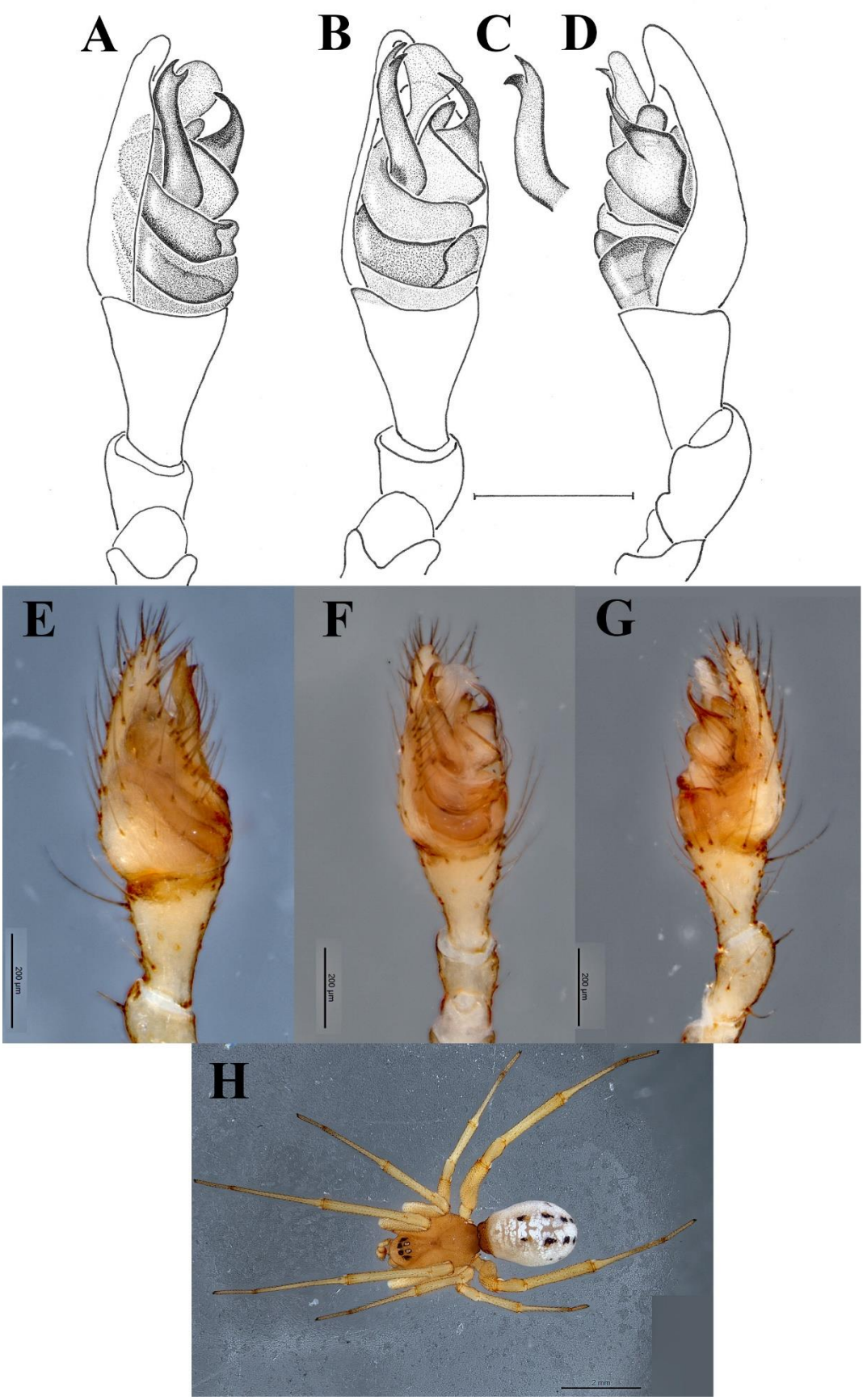

Figure 20: *Steatoda concolor*, male, Gov. Médenine, Tunisia, G. Kmira leg., CJVK SUD.AR.2022.66. **A-G.** Left male palp. **A, E.** Male palp, pl. B, **F.** Male palp, ve. **C.** Theridiid tegular apophysis. **D, G.** Male palp, rl. **H.** Habitus, do. Scale bars. A-D. 0.25 mm. E-G. 0.2 mm. H. 2 mm.

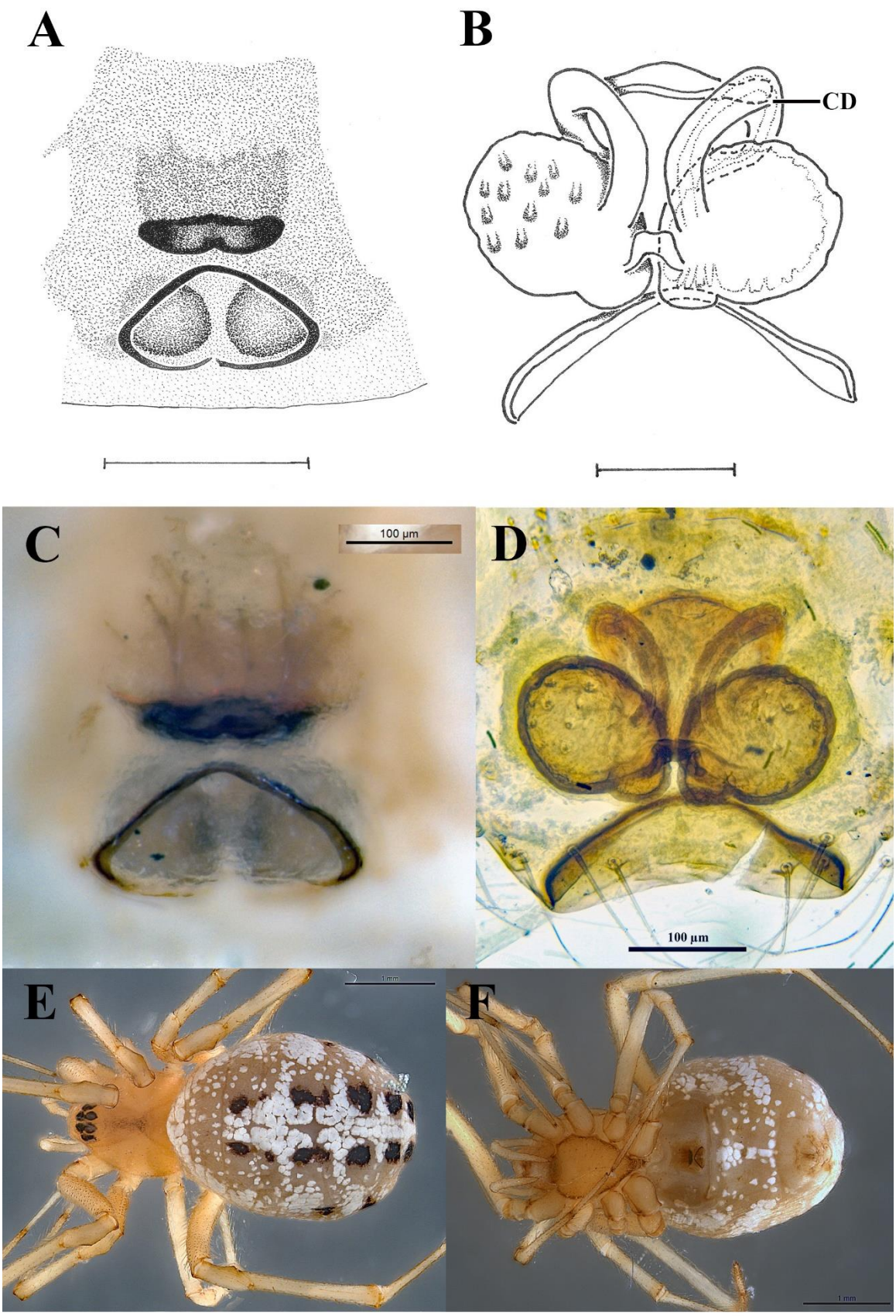

Figure 21: *Steatoda concolor*, female. **A, C-F.** Gov. Gabes, Tunisia, CJVK. **B, D.** Gov. Médenine, Tunisia, CJVK 1799. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Habitus, do. **F.** Habitus, ve. CD: copulatory duct. Scale bars. A. 0.25 mm. B-D. 0.1 mm. E, F. 1 mm.

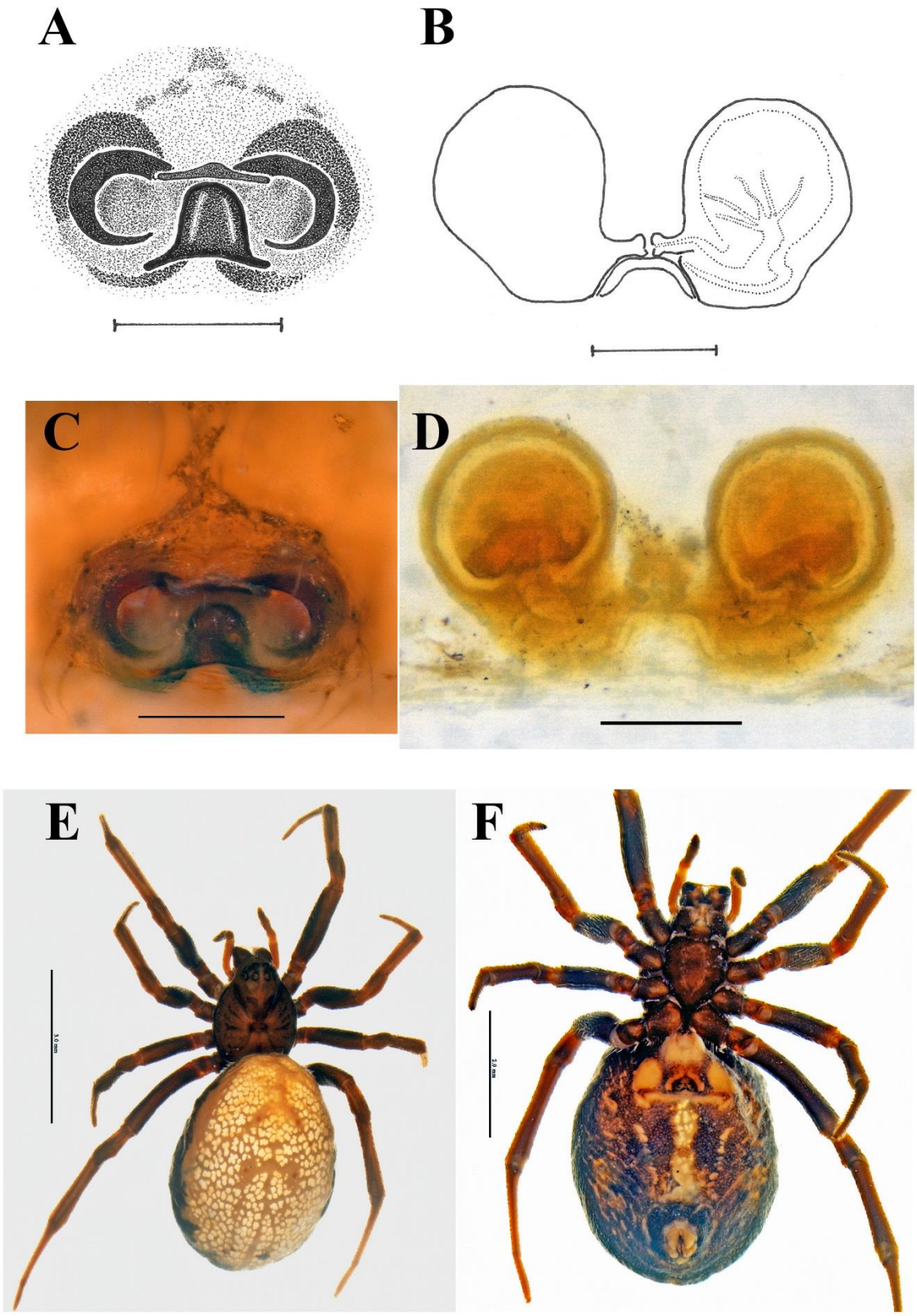

Figure 22: *Steatoda ephippiata*, female. **A, C.** Female from Cairo, Egypt, RMCA 130675, epigyne. **B, D-F.** Female from Ze'elim, Israel, HUJ11694. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. Scale bars. A, C. 0.2 mm. B, D. 0.1 mm. E. 3 mm. F. 2 mm.

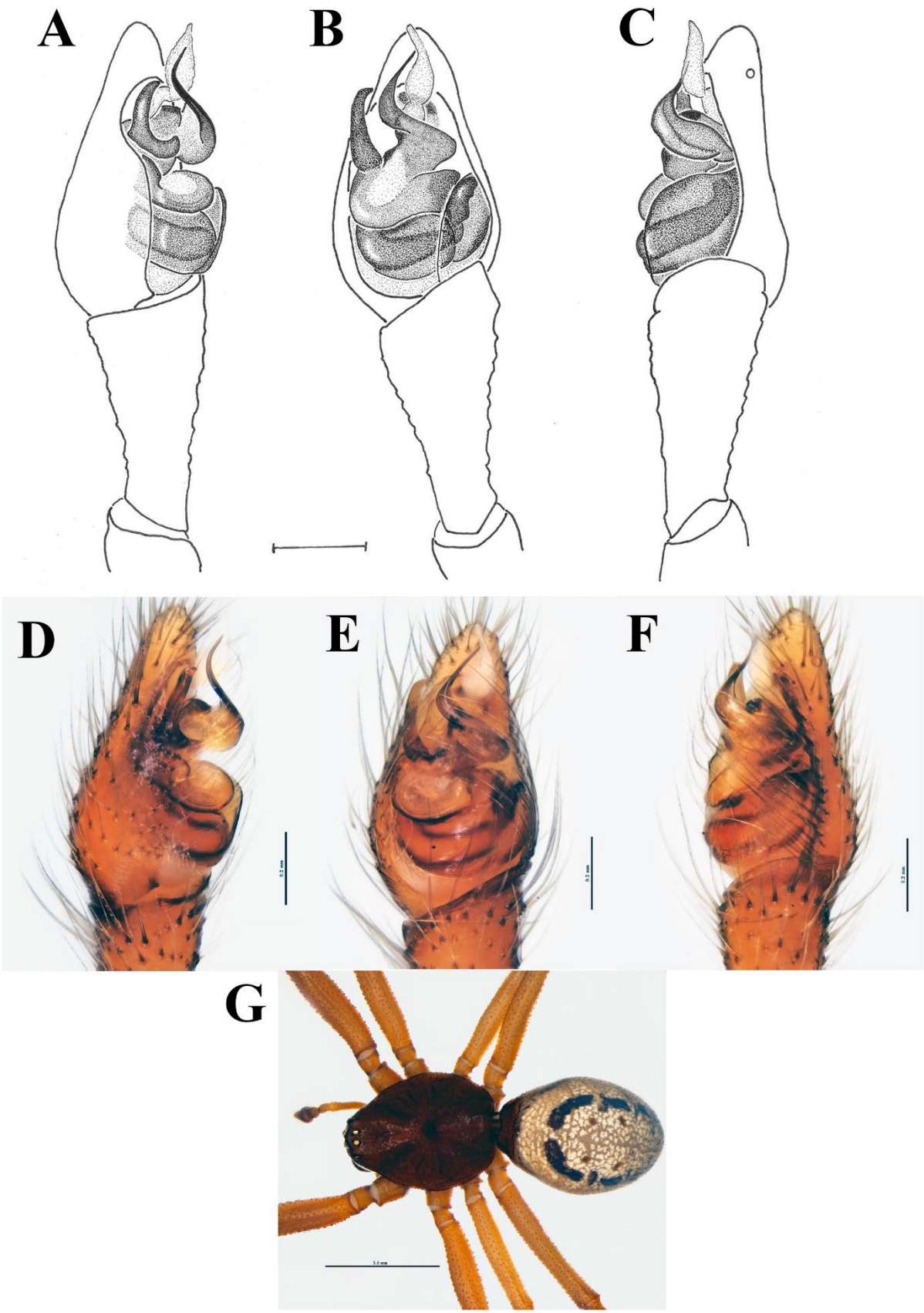

Figure 23: *Steatoda maura*, male from Ma'ale Adummim, Israel, HUJ 13113. **A-F.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, do. Scale bars. A-C. 0.25 mm. D-F. 0.2 mm. G. 3 mm.

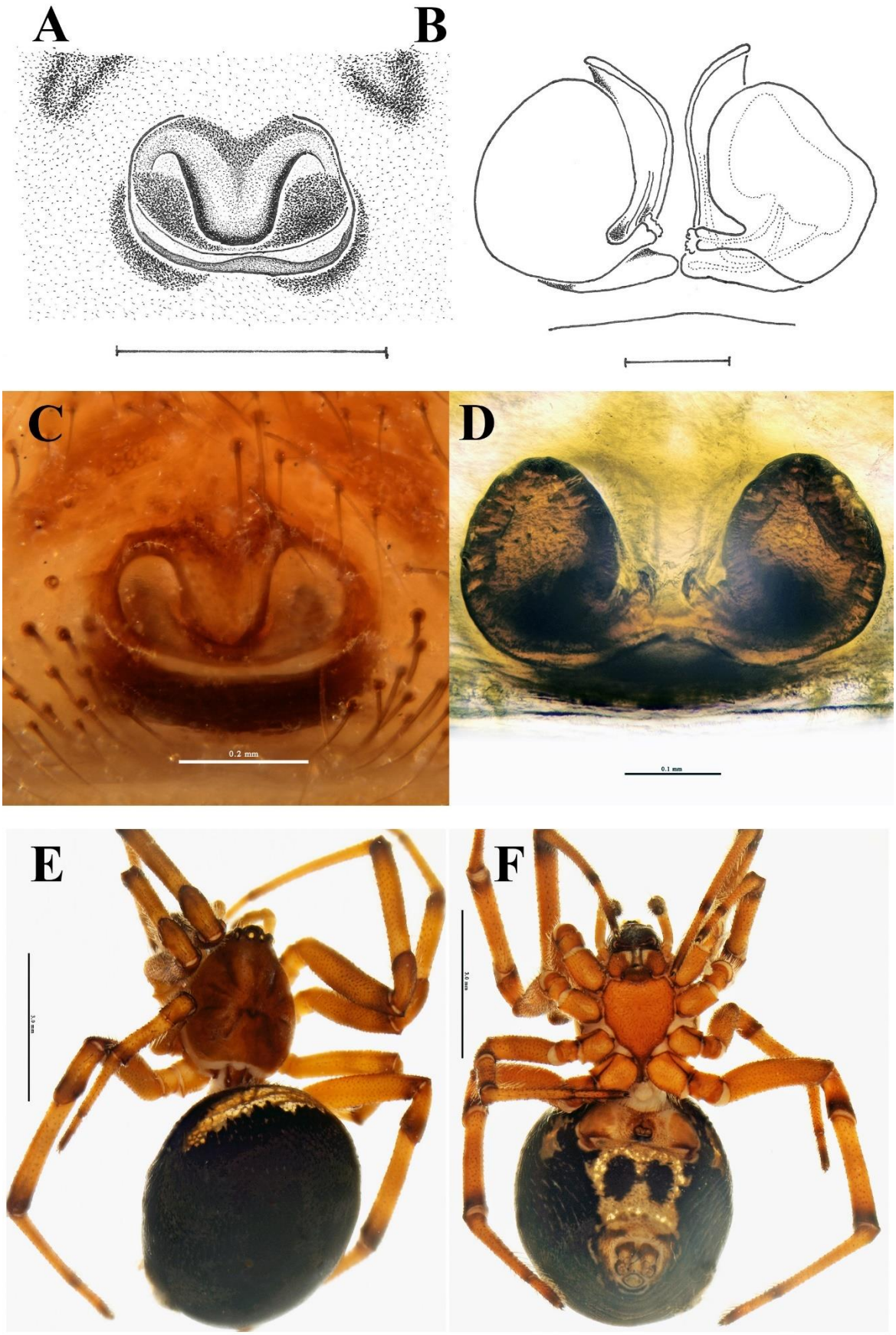

Figure 24: *Steatoda maura*, female. **A, C.** Female from Israel, HUJ 13125. **B, D-F.** Female from Rhodos, CJVK 2620. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. Scale bars. A. 0.5 mm. B, D. 0.1 mm. C. 0.2 mm. E, F. 3 mm.

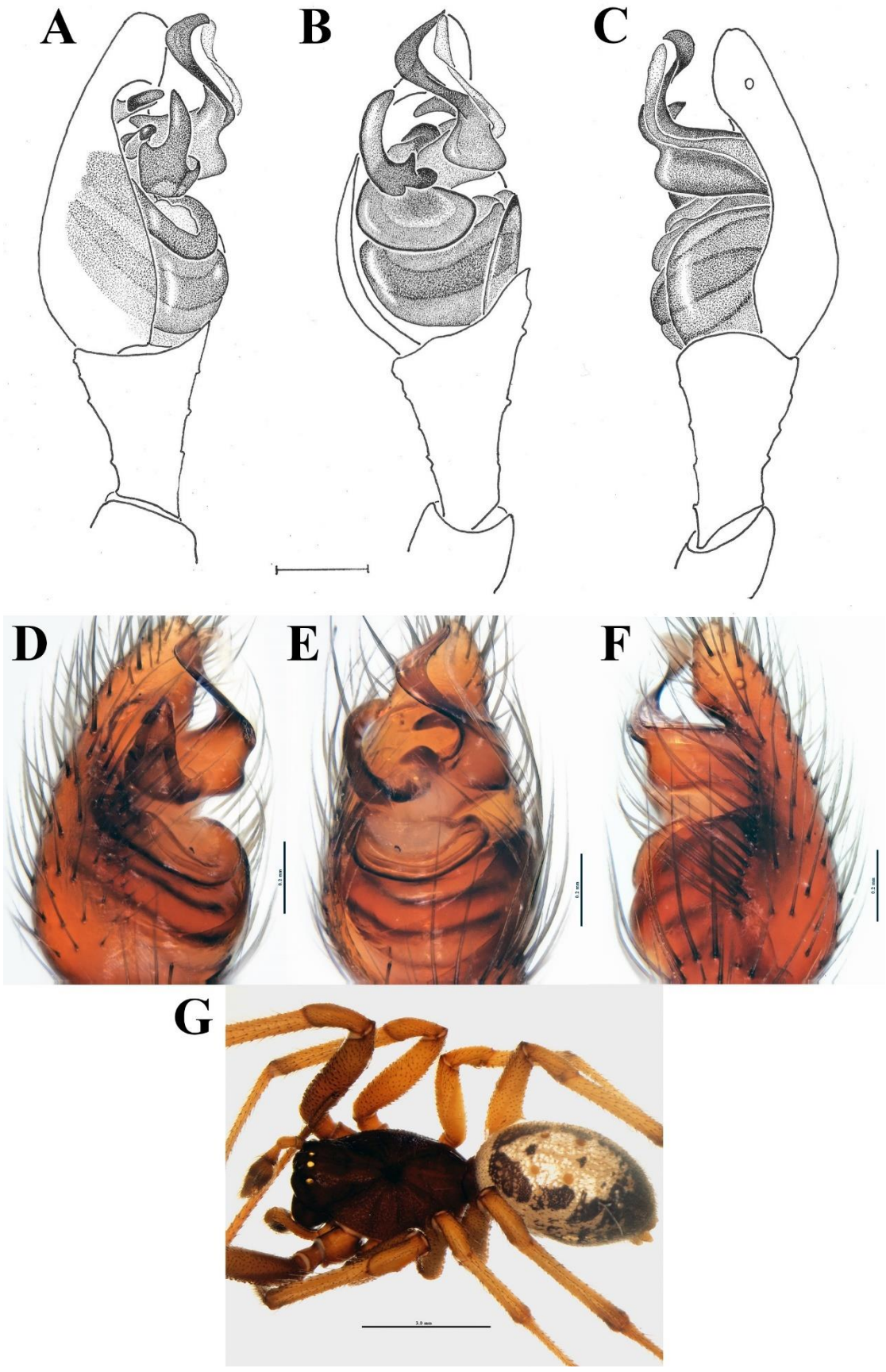

Figure 25: *Steatoda nobilis*, male. **A-G.** Male from Tenerife, CJVK 2355. **A-F.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, dorsolateral. Scale bars. A-C. 0.25 mm. D-F. 0.2 mm. G. 3 mm.

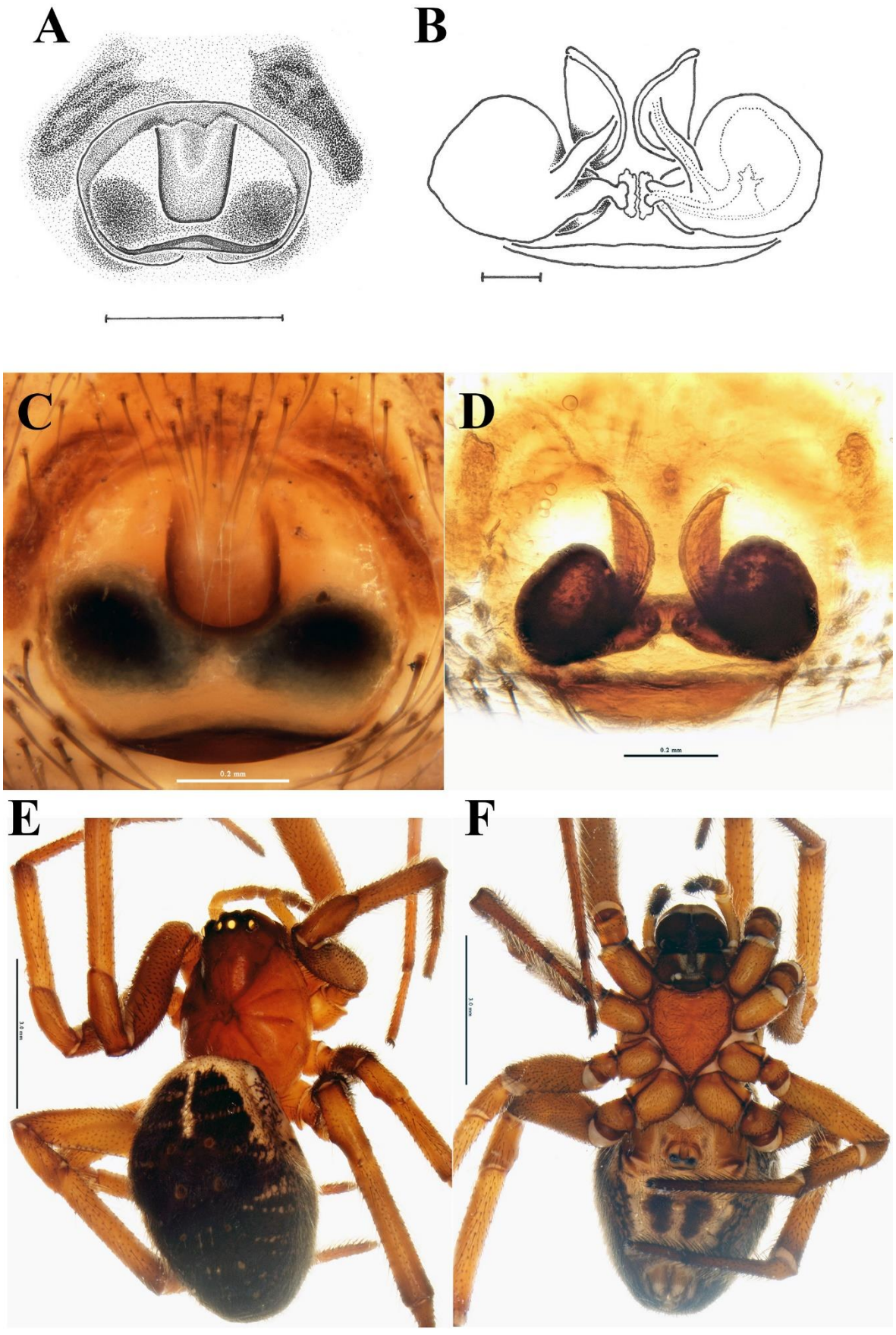

Figure 26: *Steatoda nobilis*, female. **A-F.** Female from Madeira, CJVK 2479. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, dorsolateral. **F.** Female habitus, ve. Scale bars. A. 0.5 mm. B. 0.1 mm. C, D. 0.2 mm. E, F. 3 mm.

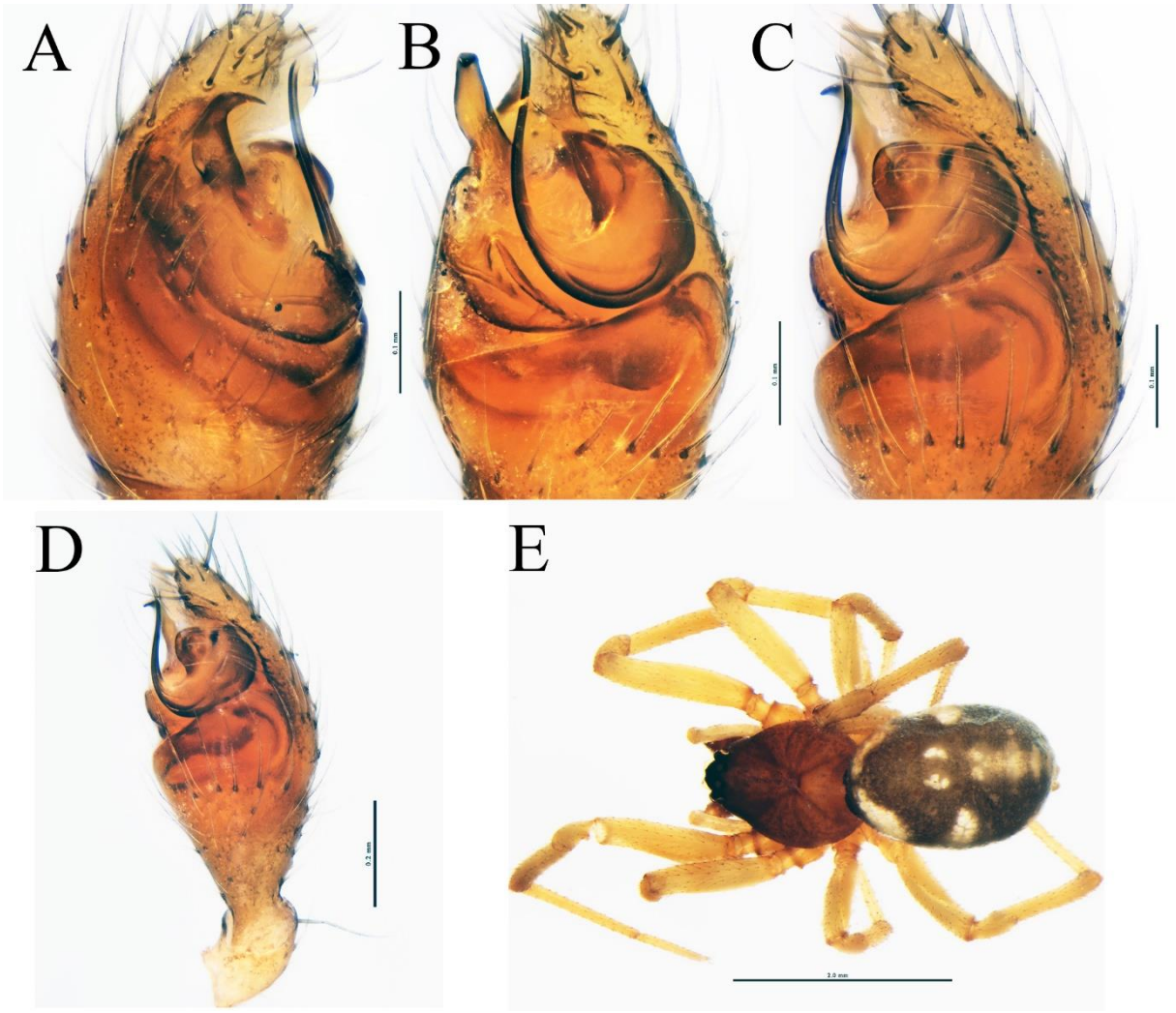

Figure 27: *Steatoda latifasciata*, male from Tenerife, CJVK 2365. **A-D.** Left male palp. **A.** Male palp, pl. **B.** Male palp, ve. **C, D.** Male palp, rl. **E.** Habitus, do. Scale bars. A-C. 0.1 mm. D. 0.2 mm. E. 2 mm.

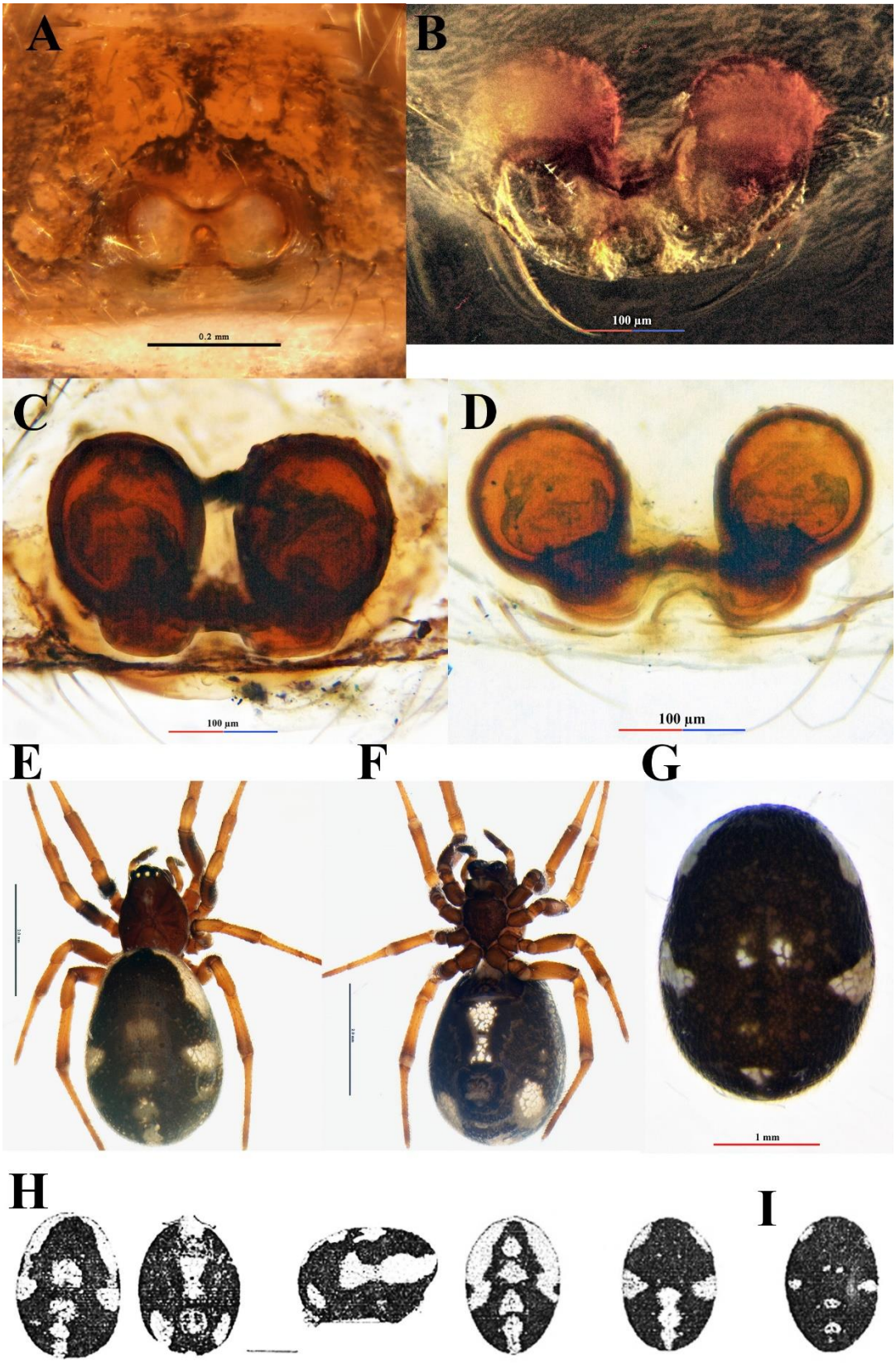

Figure 28: *Steatoda latifasciata* and *Steatoda moerens* new syn., female. **A, C, E, F, H.** *S. latifasciata*. **A.** Female from Algeria, Zemmouri, CRB. **C.** Female from Morocco, Tiznit, CRB. **E-F.** Female from Tenerife, CJVK 2338. **B, D, G, I.** *Steatoda moerens*, holotypus. **A, B.** Epigyne. **C, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. **G.** Female abdomen, do. **H-I.** Dick Jones' sketches of female abdomina, courtesy Dmitri Logunov. **H.** *Steatoda latifasciata*. Left to right: do, ve, lateral, light specimen do, dark specimen do. **I.** *Steatoda moerens*, do. Scale bars. A. 0.2 mm. B-D. 0.1 mm. E, F. 2 mm. G. 1 mm. H, I. 1 mm.

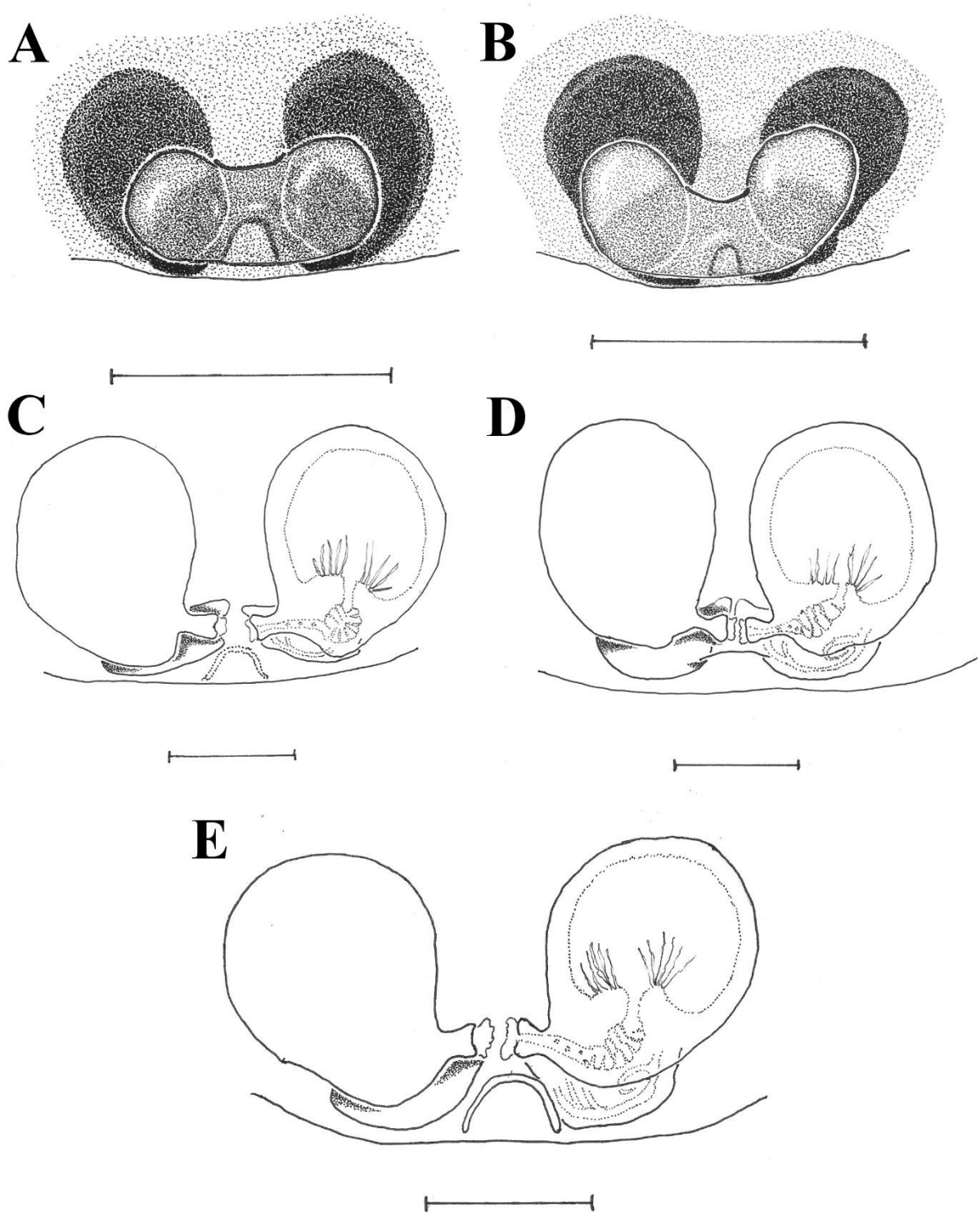

Figure 29: *Steatoda latifasciata* and *Steatoda moerens* new syn., female. **A, C, D.** *Steatoda latifasciata*. **A, C.** Female from Ageria, Zemmouri, CRB. **D.** Female from Morocco, Tiznit, CRB. **B, E.** *Steatoda moerens*, holotypus. **A, B.** Epigyne. **C-E.** Vulva, do. Scale bars. A, B. 0.25 mm. C-E. 0.1 mm.

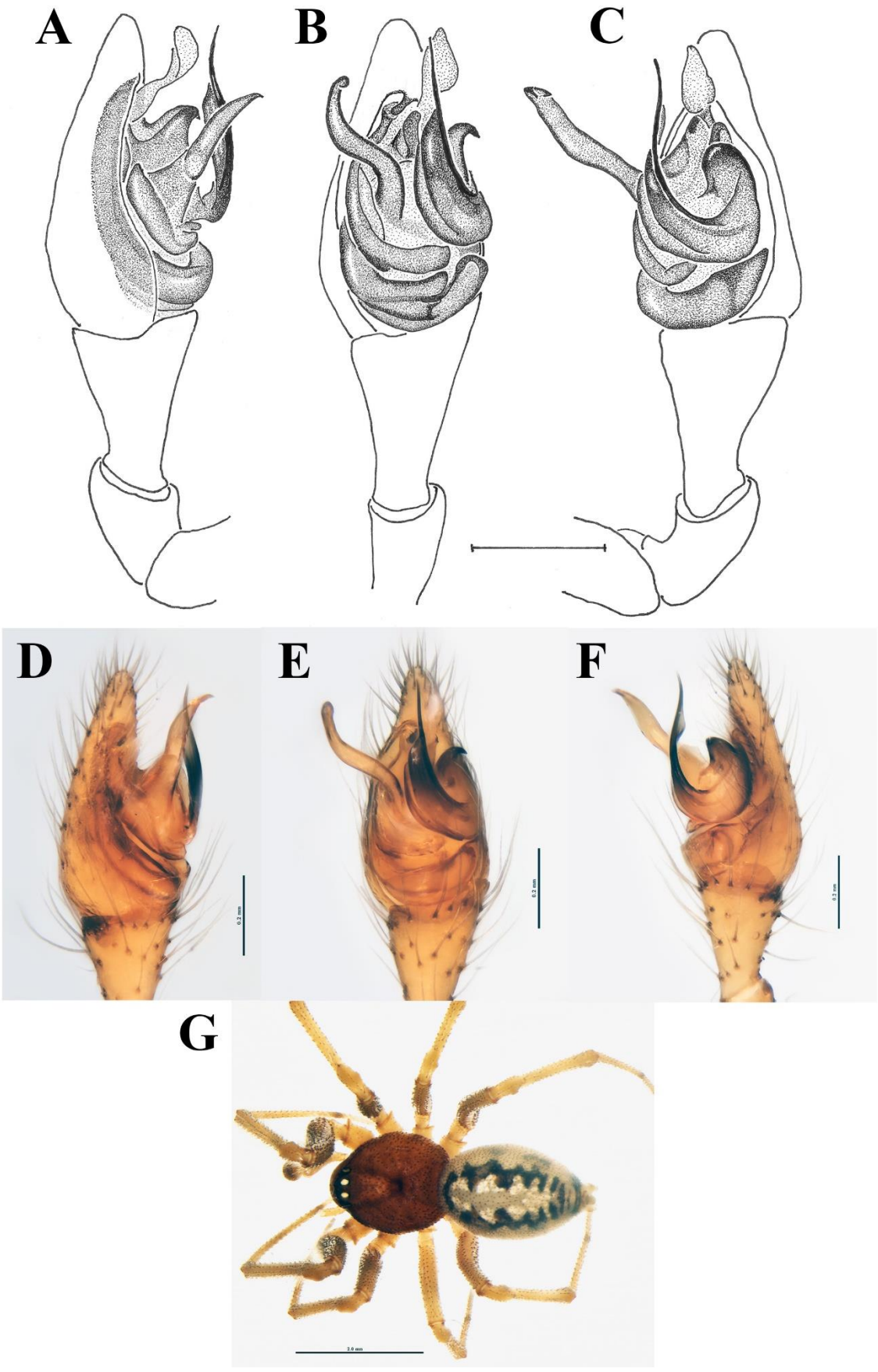

Figure 30: *Steatoda trianguloides*, male from Portugal, CJVK 3400. **A-F.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, do. Scale bars. A-C. 0.25 mm. D-F. 0.2 mm. G. 2 mm.

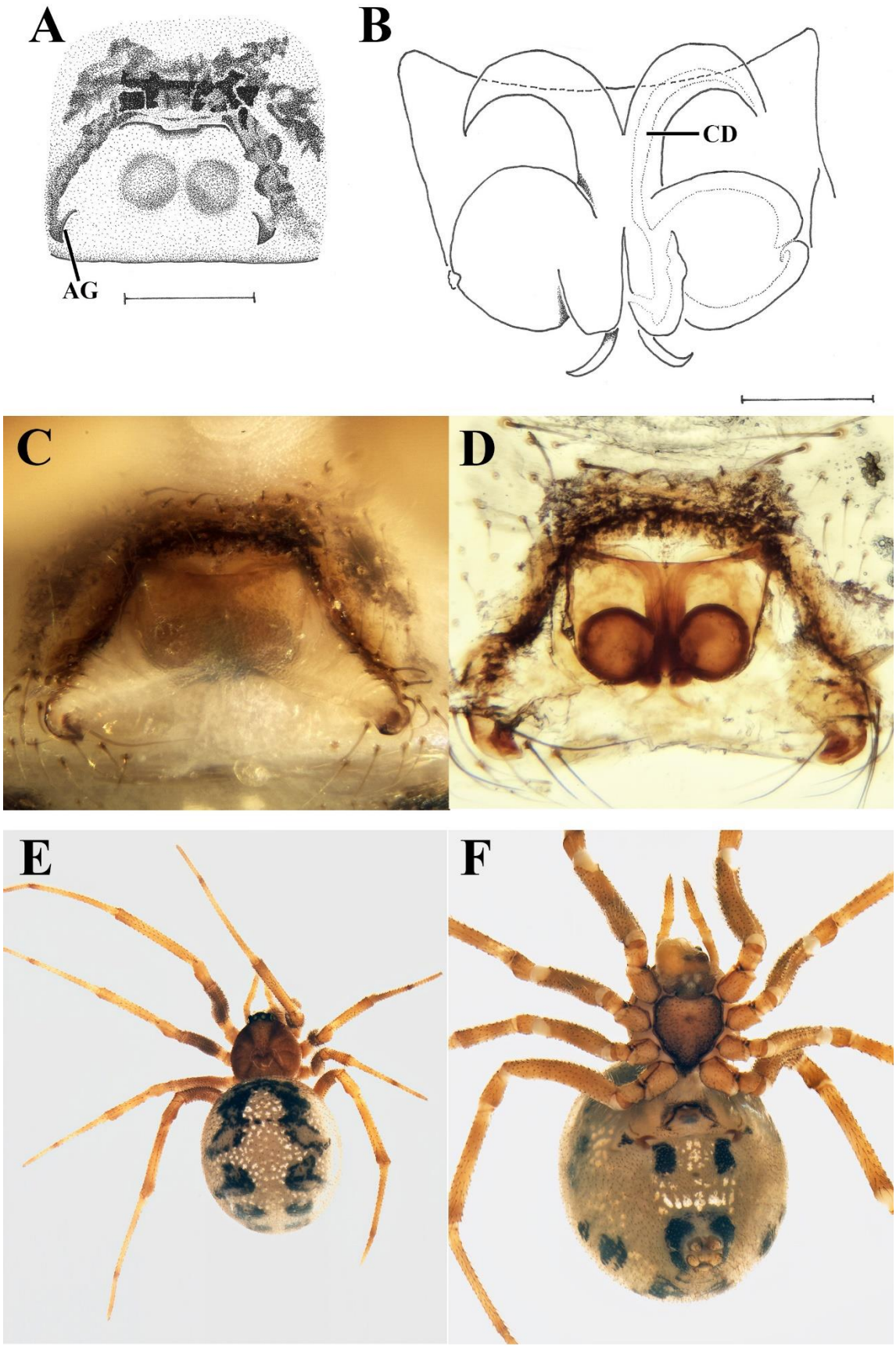

Figure 31: *Steatoda trianguloides*, female. A, C. Female from Corsica, CJVK 1482. B, D-F. Female from Cyprus, CJVK 2679. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. C, D from Bosmans *et al*. 2019. Abbreviations: AG, anchoring groove, CD, copulatory duct. Scale bars. A. 0.25 mm. B. 0.1 mm.

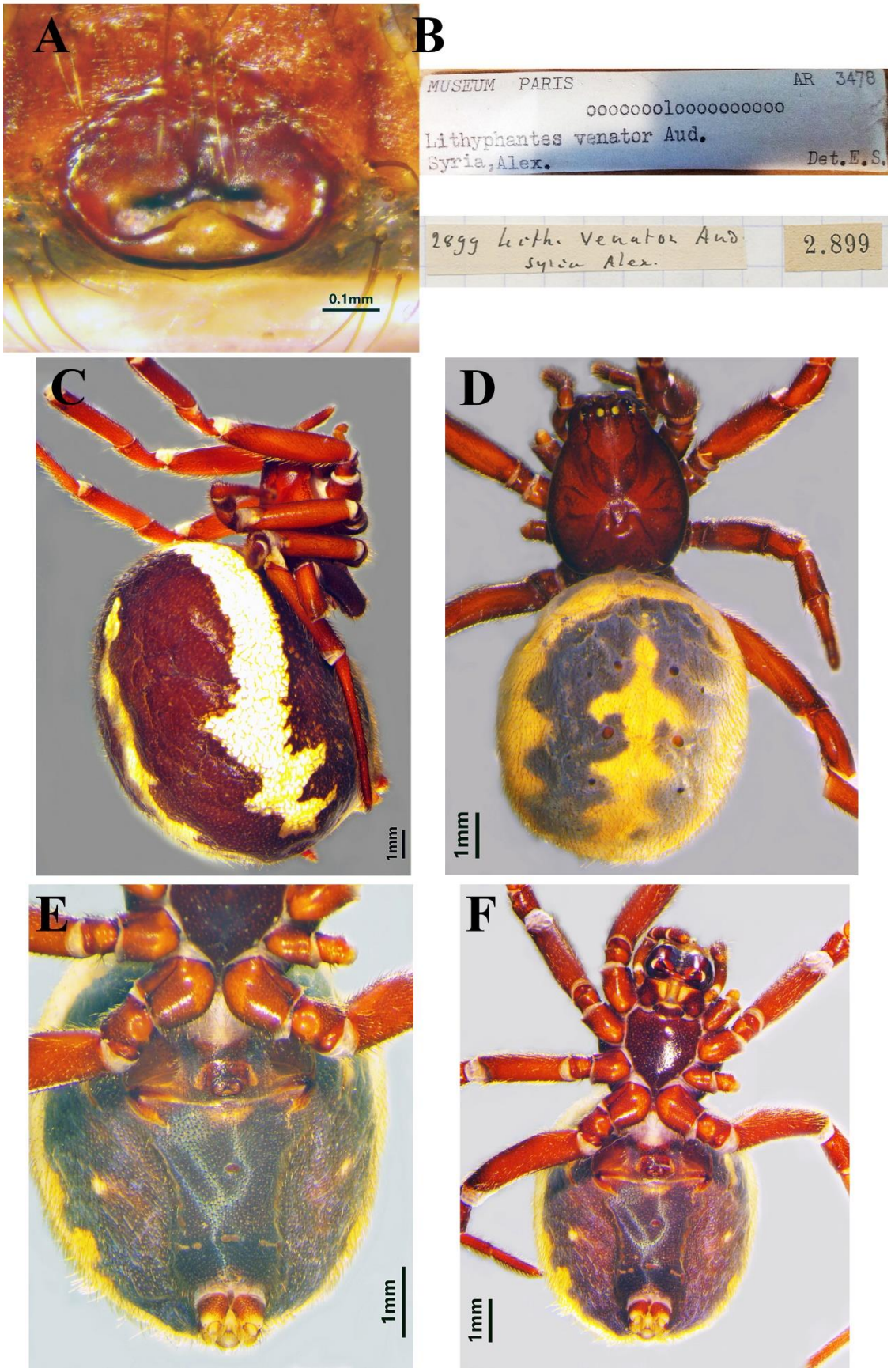

Figure 32: Specimens from the Simon collection, labeled as *Steatoda venator*. **A.** Epigyne. **B.** Accompanying labels. **C.** Female habitus, lateral. **D.** Female habitus, do. **E.** Female abdomen, ve. **F.** Female habitus, ve. Scale bars. A. 0.1 mm. C-F. 1 mm. Photos: Élise-Anne Leguin, MNHN, Paris.

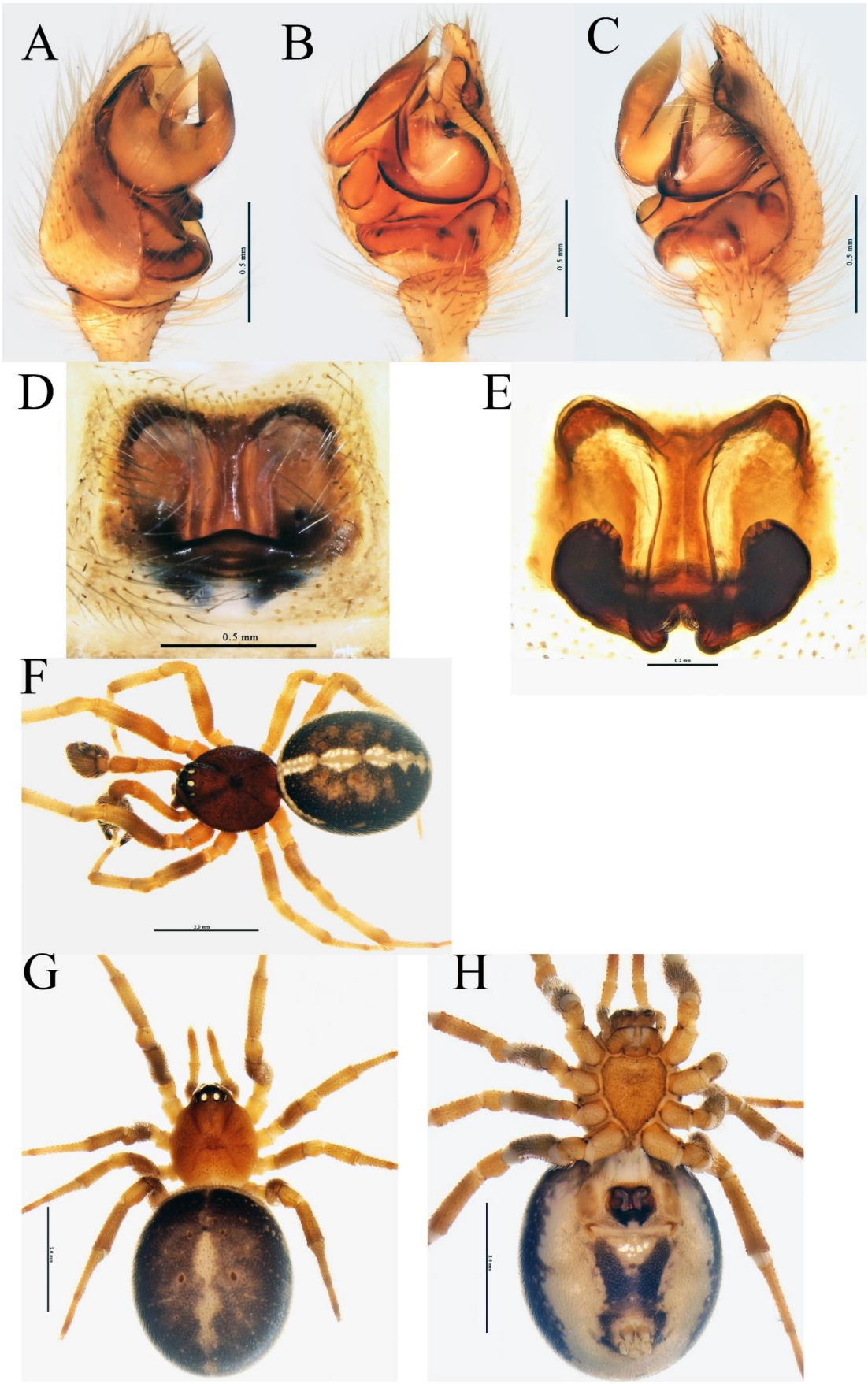

Figure 33: *Steatoda bipunctata*. **A-C, F-H.** CJVK 659. **D-E.** Specimen from France, Var, CPO. **A-C.** Left male palp. **A.** Male palp, pl. **B.** Male palp, ve. **C.** Male palp, rl. **D.** Epigyne. **E.** Vulva, do. **F.** Male habitus, do. **G.** Female habitus, do. **H.** Female habitus, ve. Scale bars. A-D. 0.5 mm. E. 0.2 mm. F-H. 2 mm.

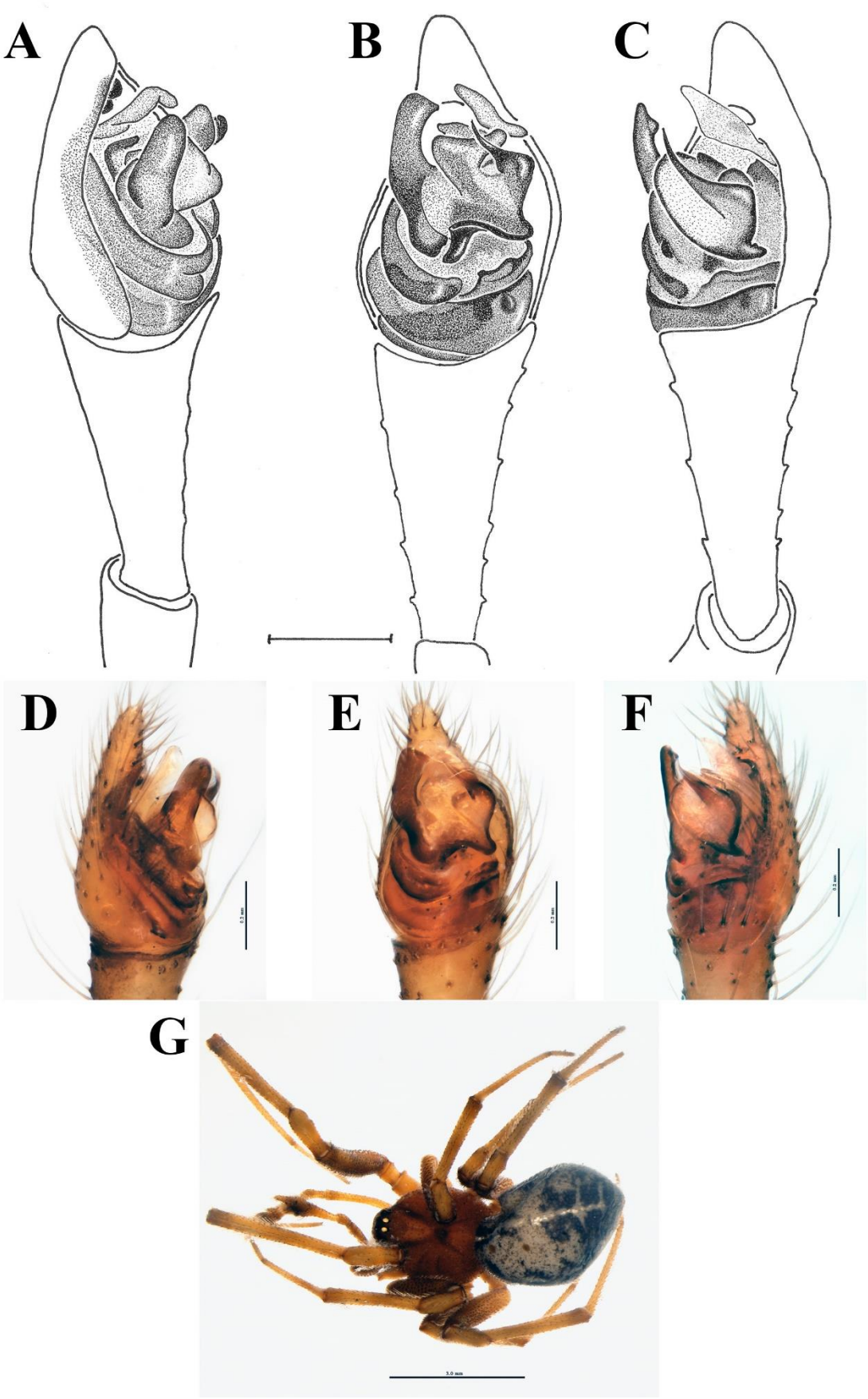

Figure 34: *Steatoda castanea*, male from Czechia, NMP 769/4. **A-F.** Right male palp, inverted. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, do. Scale bars. A-C. 0.25 mm. D-F. 0.2 mm. G. 3 mm.

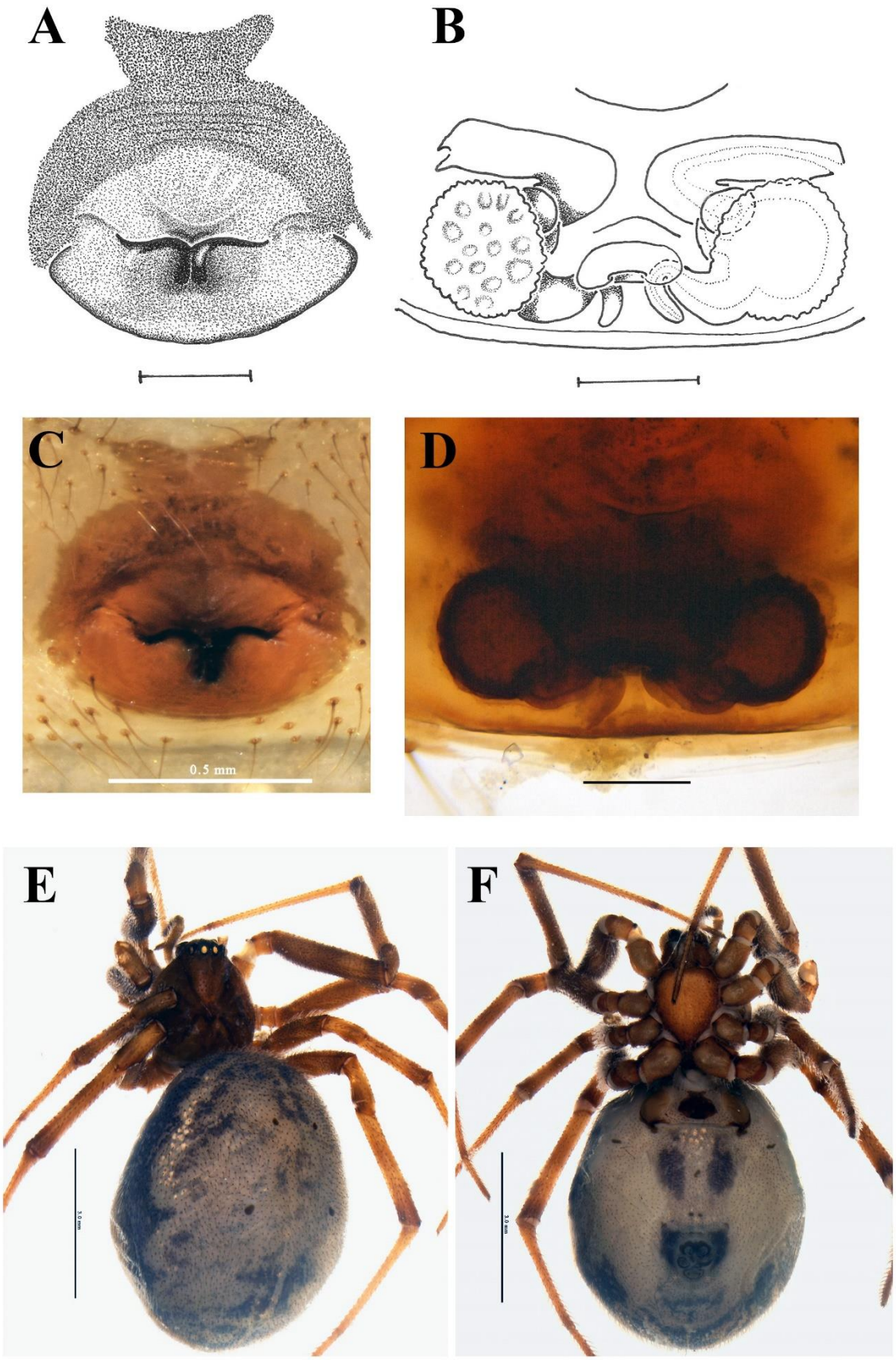

Figure 35: *Steatoda castanea*, female from Czechia, NMP 769/4. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. Scale bars. A. 0.25 mm. B, D. 0.1 mm. C. 0.5 mm. E, F. 3 mm.

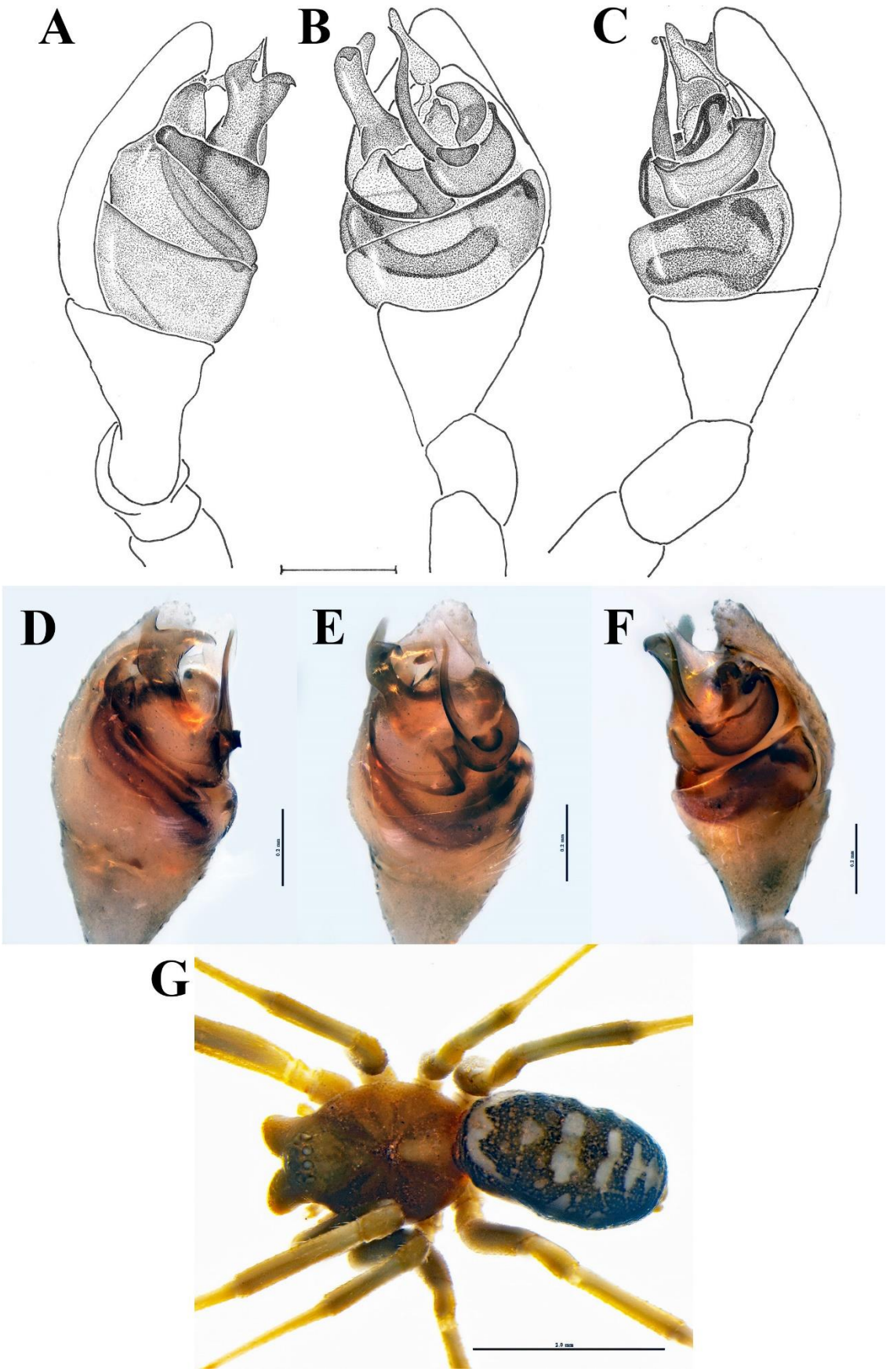

Figure 36: *Steatoda dahli*, male holotypus from Turkey, NHMW 530. **A-F.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, do. Scale bars. A-C. 0.25 mm. D-F. 0.2 mm. G. 2 mm.

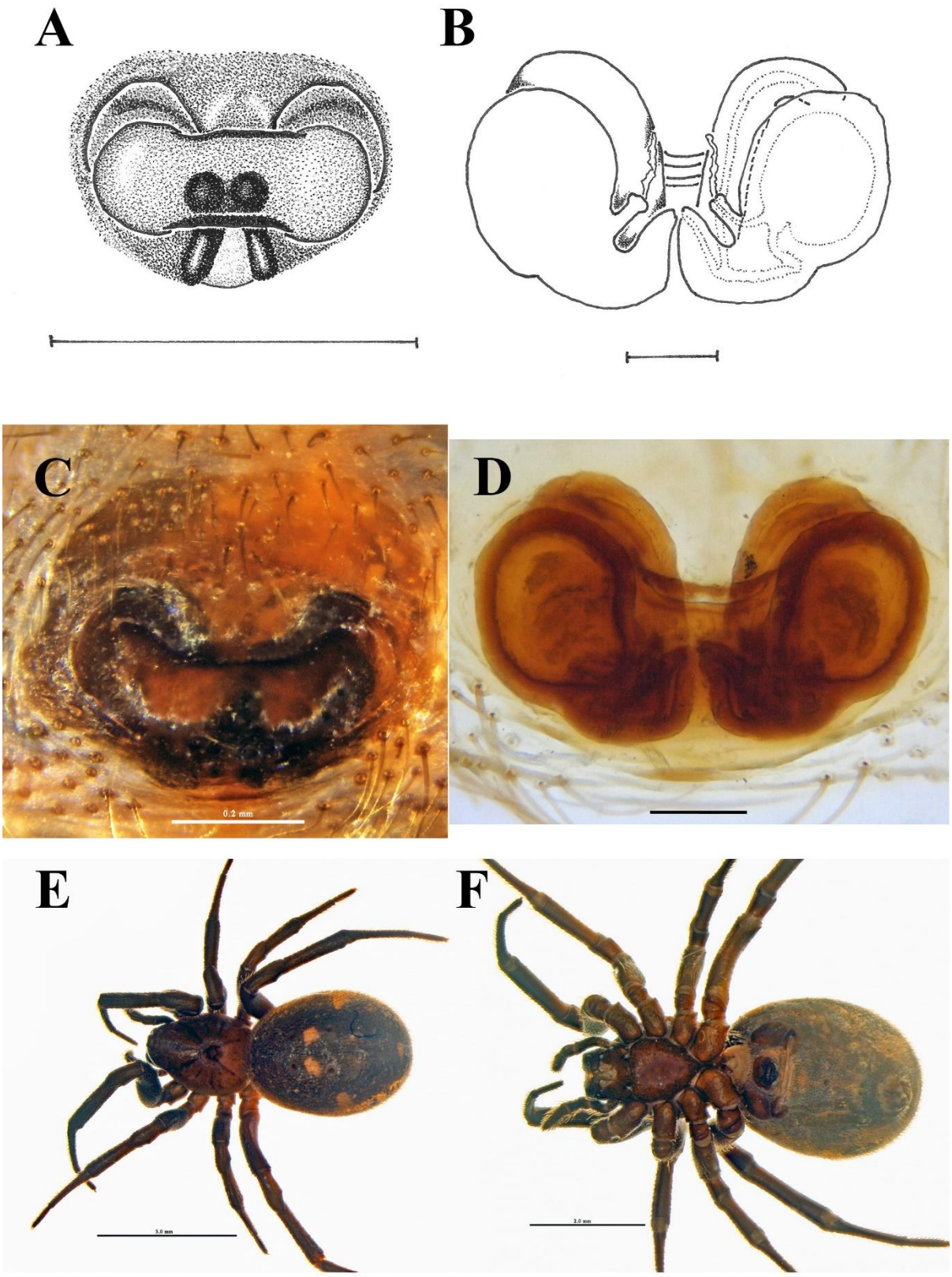

Figure 37: *Steatoda dahli*, females from Israel**. A.** HUJ 13326. **B-F.** HUJ 13321. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, do. **F.** Female habitus, ve. Scale bars. A. 0.5 mm. B, D. 0.1 mm. C. 0.2 mm. E. 3 mm. F. 2 mm.

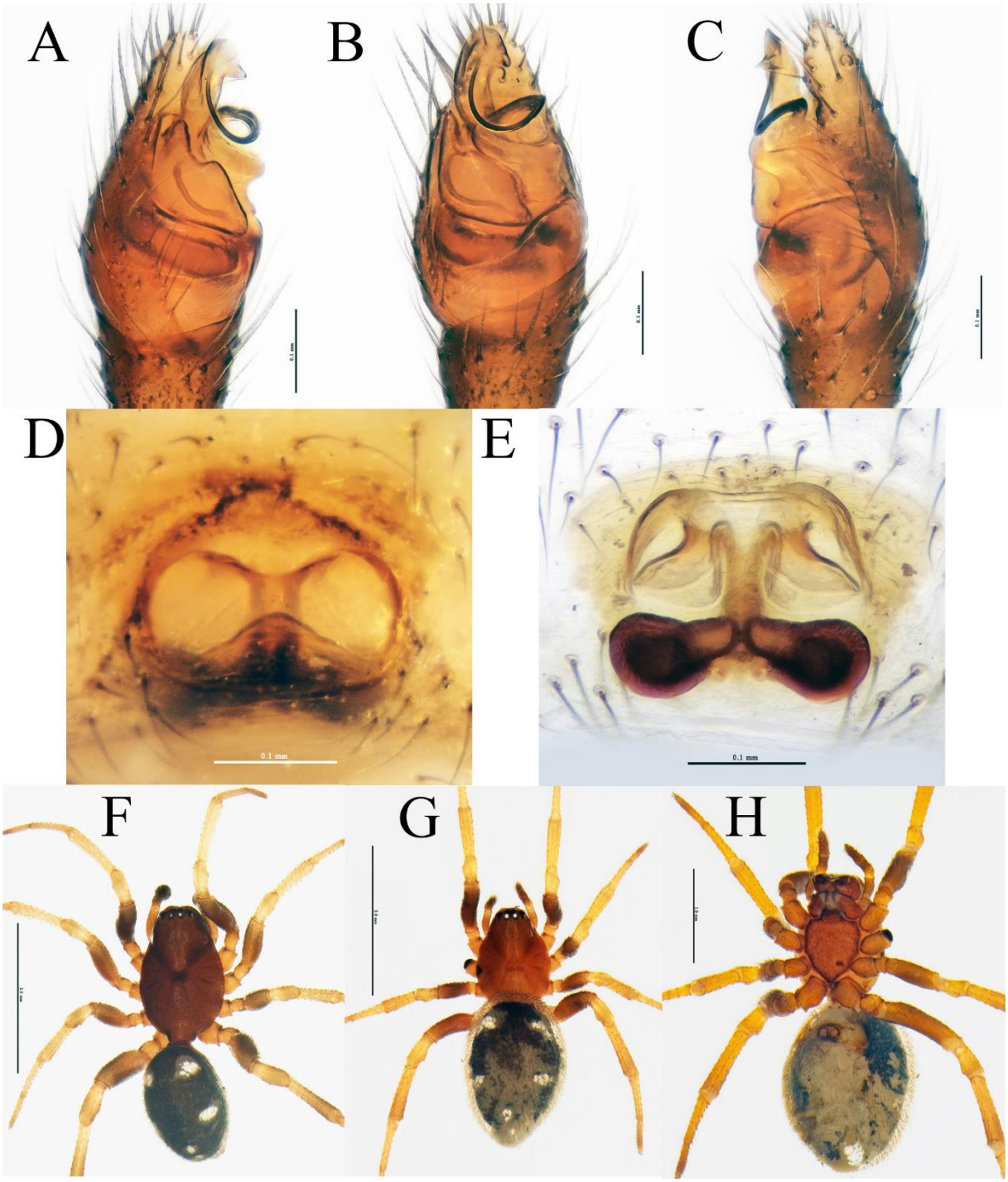

Figure 38: *Steatoda erigoniformis*. **A-H.** Specimens from Saudi-Arabia, CMA 1268. **A-C.** Left male palp. **A.** Male palp, pl. **B.** Male palp, ve. **C.** Male palp, rl. **D.** Epigyne. **E.** Vulva, do. **F.** Male habitus, do. **G.** Female habitus, do. **H.** Female habitus, ve. Scale bars. A-E. 0.1 mm. F, G. 2 mm. H. 1 mm.

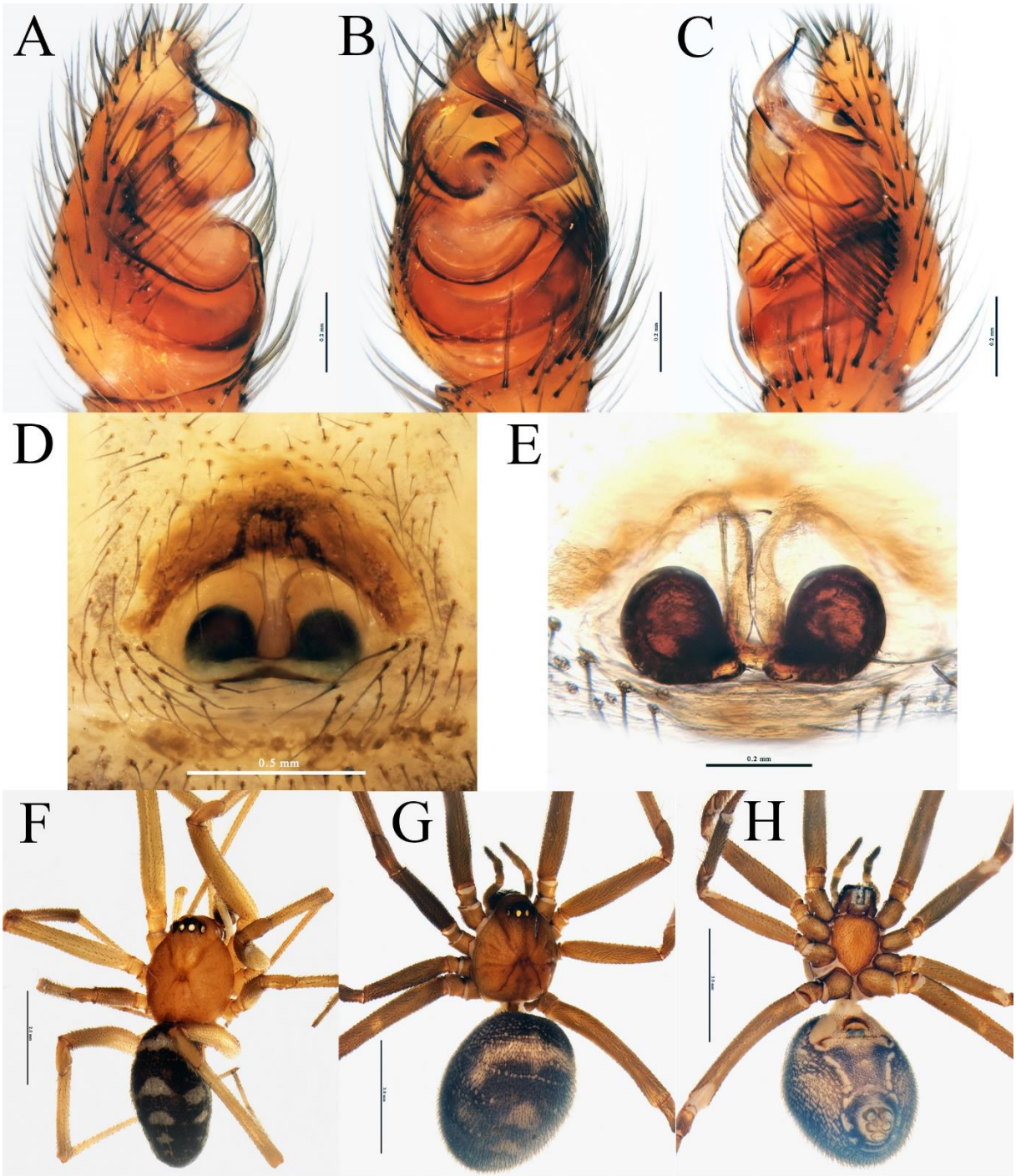

Figure 39: *Steatoda grossa*. **A-C, F.** Specimen from France, Var, CPO. **D, E, G, H.** Specimen from France, Bouches du Rhône, CPO. **A-C.** Left male palp. **A.** Male palp, pl. **B.** Male palp, ve. **C.** Male palp, rl. **D.** Epigyne. **E.** Vulva, do. **F.** Male habitus, dorso-lateral view. **G.** Female habitus, dorso-lateral view. **H.** Female habitus, ve. Scale bars. A-C, E. 0.2 mm. D. 0.5 mm. F. 2 mm. G-H. 3 mm.

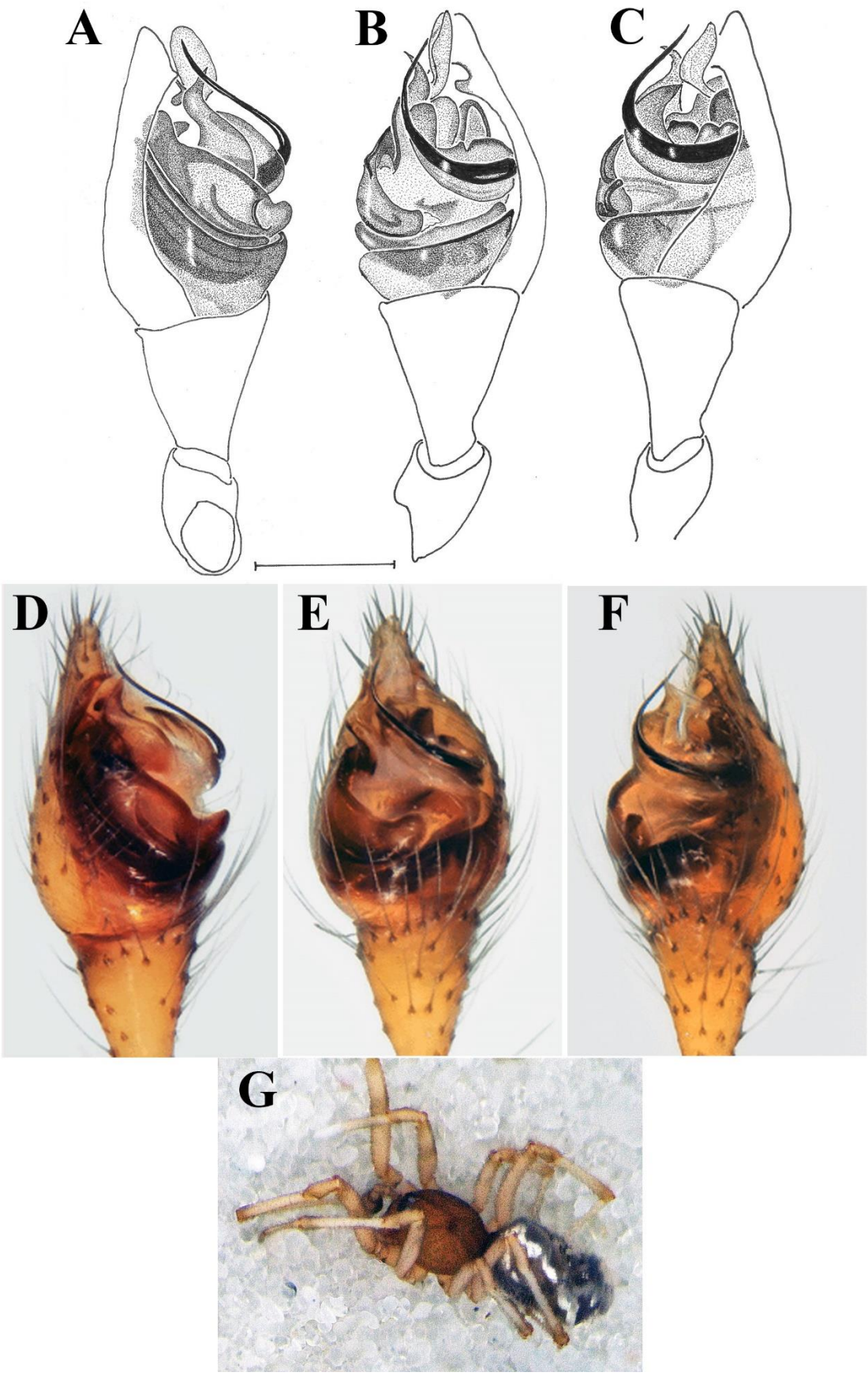

Figure 40: *Steatoda ifricola*, male from Morocco, CPO. **A-F.** Left male palp. **A, D.** Male palp, pl. **B, E.** Male palp, ve. **C, F.** Male palp, rl. **G.** Male habitus, dorsolateral. D-E from LECIGNE *et al*. 2020. Scale bars. A-C 0.25 mm.

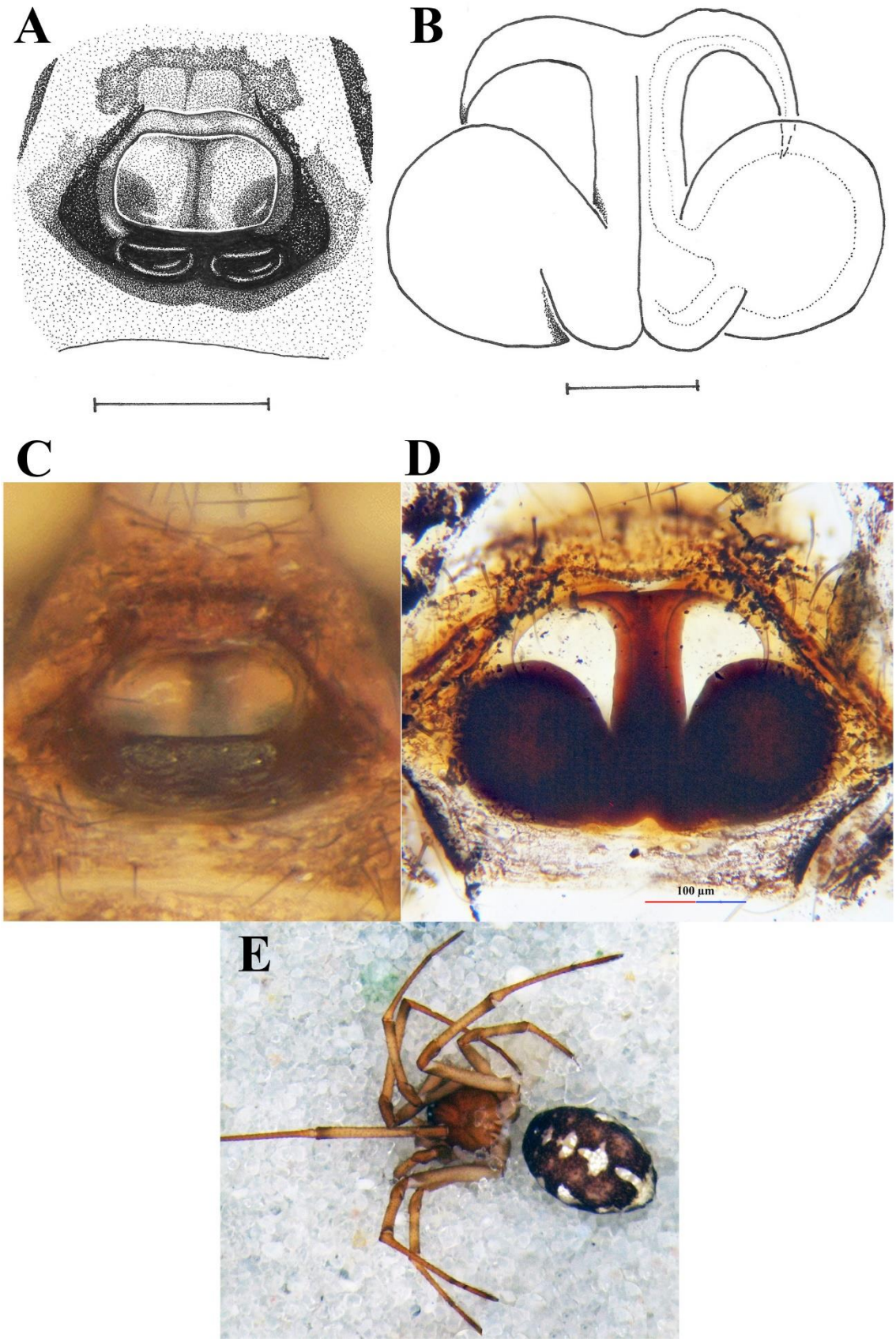

Figure 41: *Steatoda ifricola*, female from Morocco, CPO. **A, C.** Epigyne. **B, D.** Vulva, do. **E.** Female habitus, do. C, D from LECIGNE *et al*. 2020. Scale bars. A. 0.25 mm. B, D. 0.1 mm.

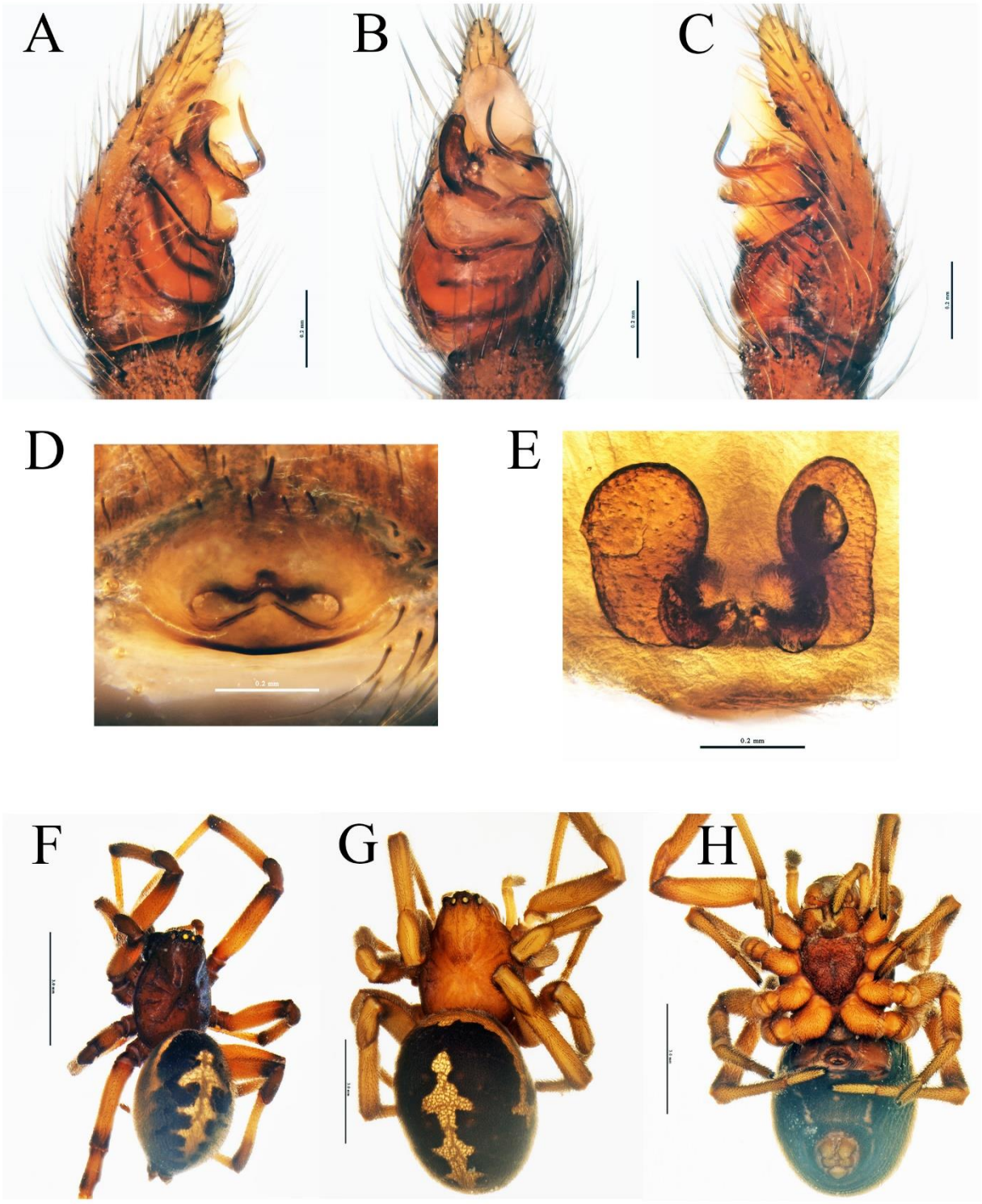

Figure 42: *Steatoda paykulliana*. Specimens from Tunisia, CJVK 2435. **A-C.** Left male palp. **A.** Male palp, pl. **B.** Male palp, ve. **C.** Male palp, rl. **D.** Epigyne. **E.** Vulva, do. **F.** Male habitus, dorso-lateral view. **G.** Female habitus, do. **H.** Female habitus, ve. Scale bars. A-E. 0.2 mm. F-H. 3 mm.

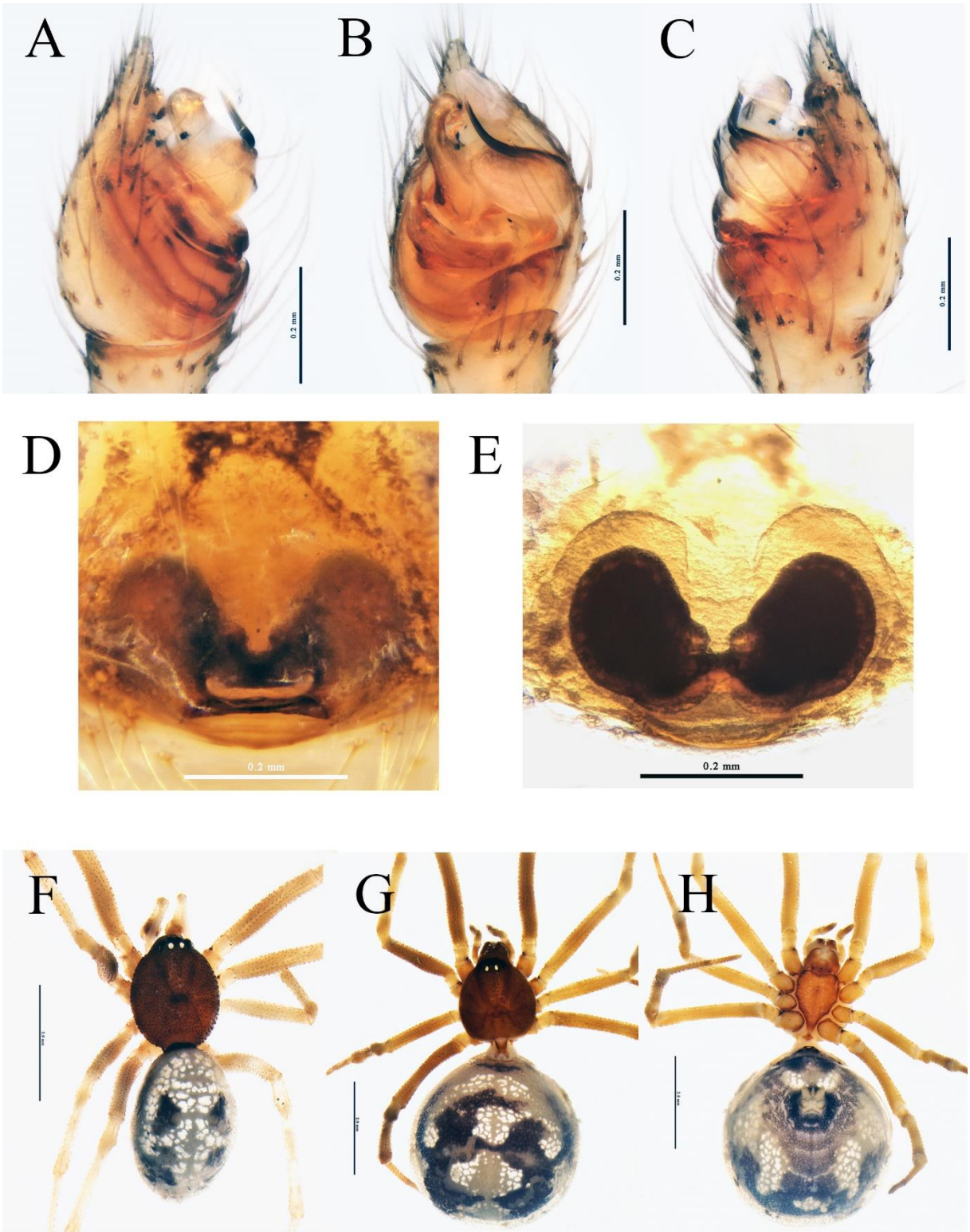

Figure 43: *Steatoda triangulosa*. Specimens from Belgium, CJVK 1124. **A-C.** Left male palp. **A.** Male palp, pl. **B.** Male palp, ve. **C.** Male palp, rl. **D.** Epigyne. E. Vulva, do. **F.** Male habitus, do. **G.** Female habitus, do. **H.** Female habitus, ve. Scale bars. A-E. 0.2 mm. D. 0.5 mm. F-H. 2 mm.

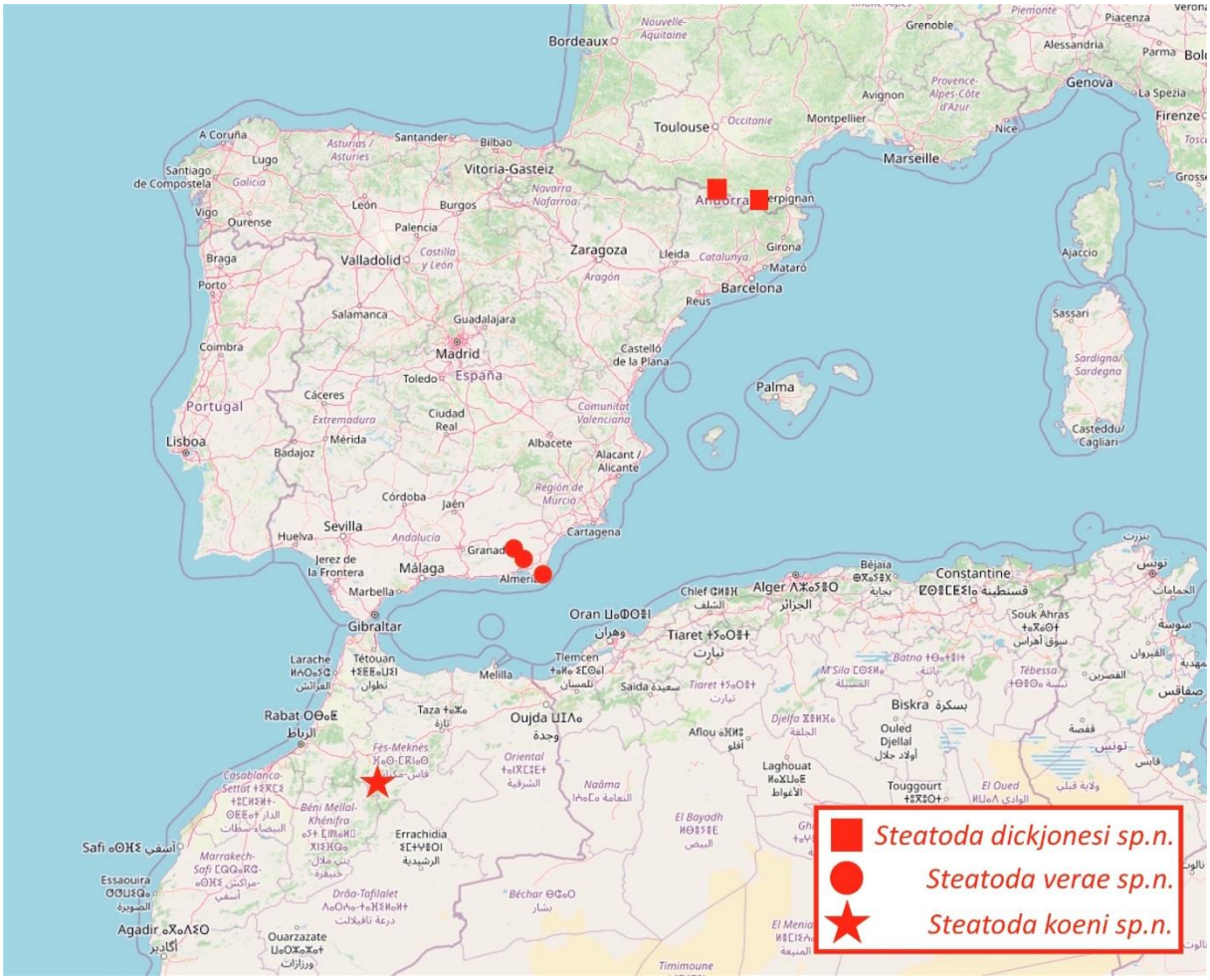

Figure 44: Known distributions of *S. dickjonesi* sp. nov., *S. verae* sp. nov. and *S. koeni* sp. nov.

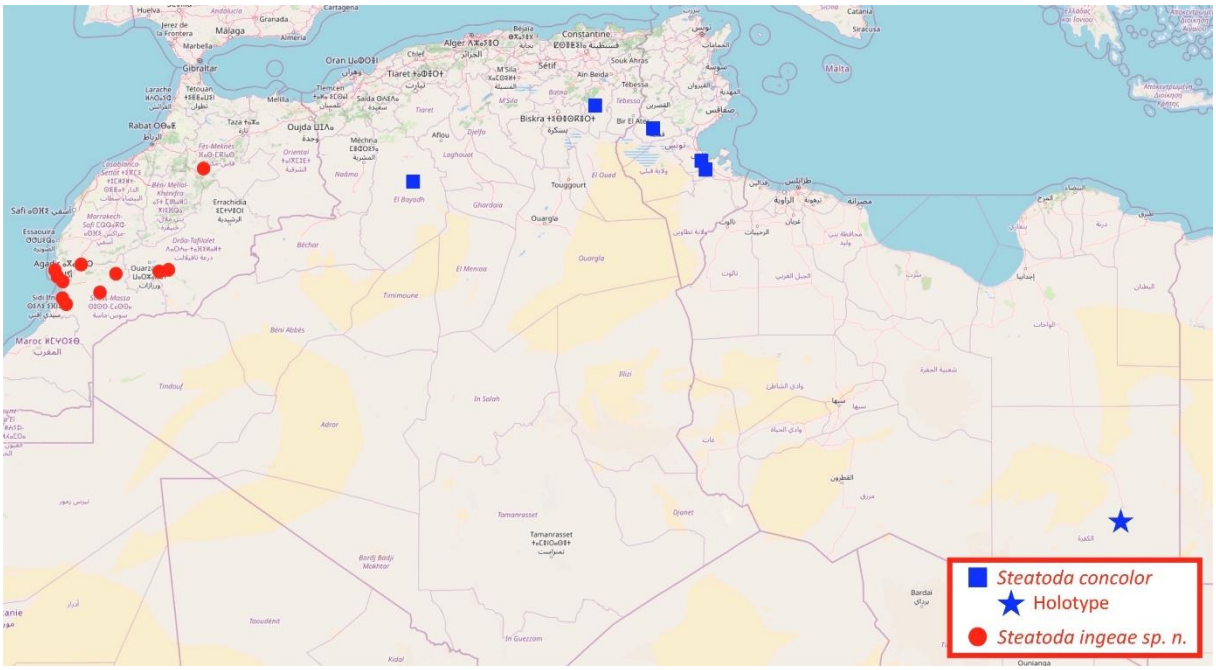

Figure 45: Known distributions of *S. concolor* and *S. ingeae* sp. nov.

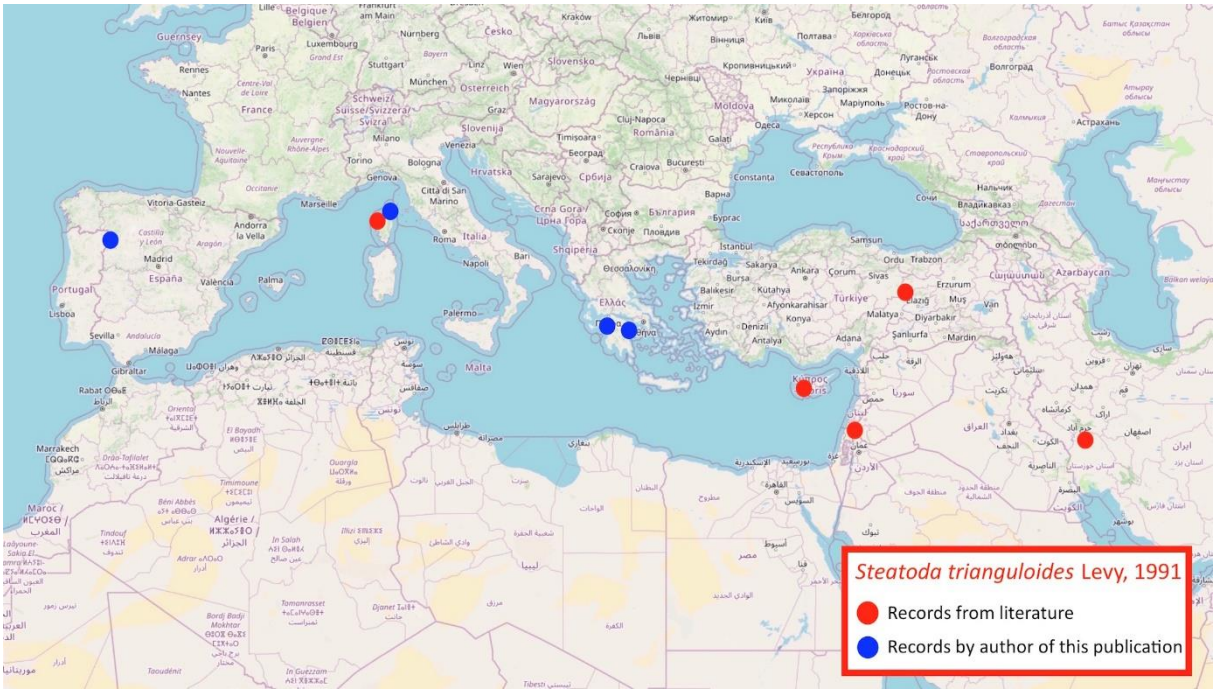

Figure 46: Known distribution of *S. trianguloides*.